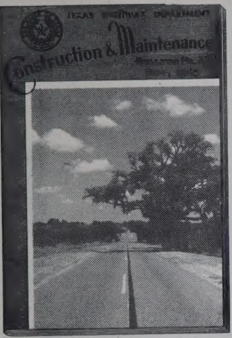
TEXAS HIGHWAY DEPARTMENT

Construction & Maintenance

BULLETIN No. 23

May, 1953

About the Cover . . .



The old expression, "Woodsman, spare that tree," should be resounded throughout the Department. Trees along the roadway, whether natural or transplanted, not only add beauty but are an important safety factor. There is a tendency for motorists to "open 'er up and see what she'll do" in the wide open spaces, and trees and foliage along the roadway have a tendency to counteract this psychological urge.

It is a known fact that motoring over a symmetrical and monotonous highway will greatly increase driving fatigue which, along with excessive speed, are the primary causes of accidents. Trees and other shrubs properly placed and maintained along the right of way have eye appeal and will lend much to the overall appearance of the roadway. The cover picture was made on U.S. 183 north of Cuero in DeWitt County, District 13.

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Construction and Maintenance Bulletin

The purpose of the *Construction & Maintenance Bulletin* is to furnish a medium for presenting practical information applicable to current highway problems. These conclusions and data are not necessarily endorsed by the Highway Department nor are they to be construed as instructions. Employees are invited and urged to submit suggestions and relate experiences which would benefit those engaged in the construction and maintenance of highways.

Photographic services are available and other assistance may be obtained, if desired, in preparing material for submission. All material and comments should be directed to the Chief Engineer, Construction and Maintenance, Austin 14, Texas.

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Construction Division .... D- 6
Traffic Services Division D-16

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Traffic Services Division, INFORMATION SECTION

REPRODUCED

Operations Division, REPRODUCTION SECTION

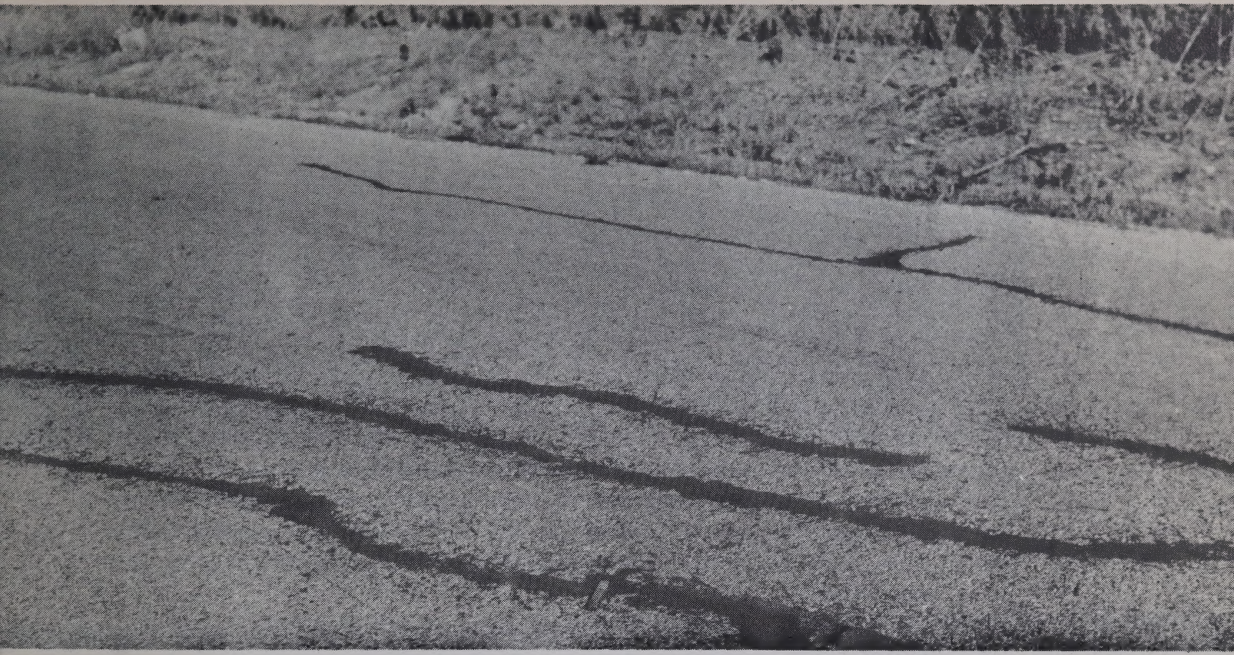
As We See It

Even without the favorable development in a better sentiment in Korea, it was becoming increasingly evident that production was to get ahead of demand.

The manufacturer who told us two years ago to be prepared "for the long tomorrow" now is pressing the thought that he has our needs in stock for immediate delivery.

Which brings us to these facts: There is very little need for the word "emergency" in our regular thinking. Our stock accounts should reflect only those items needed for work we know will be done in the near future and not for work in the planning stage.

The change from scarcity and control to "buy only what you need now" is refreshing.



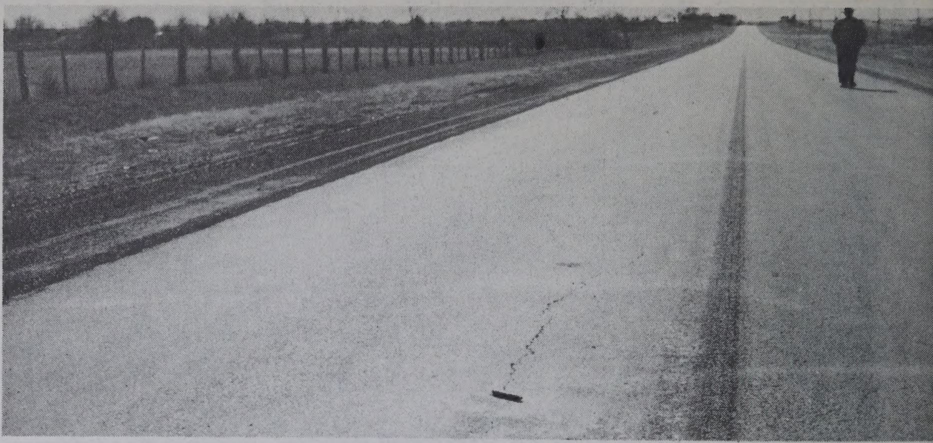
Cracks that have been sealed and covered with blow sand. These cracks have been sealed for more than three months and are still in excellent condition. We have instances where asphalt with other types of materials have been used in sealing this type crack and the crack reappears within a matter of a few days.

SEALING CRACKS

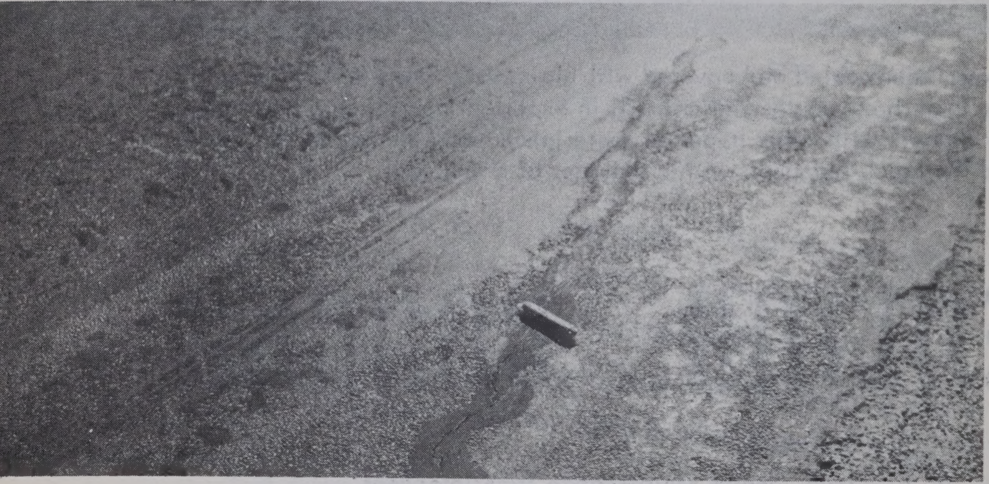
A. F. Cloud, Senior Maintenance Superintendent
District 23

Filling "pot holes" has been a chore ever since man has used primitive highways. As man became more proficient and made the transition to paved roadways, he more or less left the pot hole era and assumed the ever-present problem of sealing cracks -- cracks that for one reason or another appear in our present-day pavements. In the art of sealing cracks, as in any other line of endeavor, we usually have as many authorities as we have individuals -- and each one is equally as vociferous that his method is the best and will back it with facts and figures.

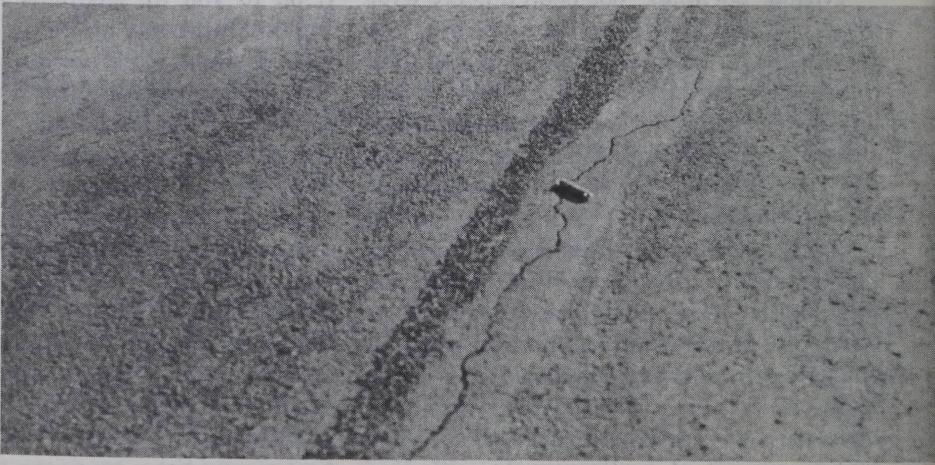
So it is with District 23. We have developed a very simple, economical, and speedy manner of sealing cracks. We find that it does the job and, not trying to win any converts to our method, we wish to pass it on to you for whatever it may be worth. The essential equipment is an asphalt tank with a slight modification of the nozzle. The nozzle on the spray gun has been reduced to a three-sixteenth-inch round opening. This is a circular opening rather than the usual slotted opening on a standard spray nozzle. Approximately ten pounds of pressure are used in forcing the asphalt into the cracks. We are using an RC-2 asphalt, but other types of cutback asphalt can be used. After the crack is sealed, blow sand is liberally applied with a Number 2 scoop. As traffic drives over these patched areas the sand-asphalt mixture feeds into the cracks. This type of sand has a tendency to "stay alive," or to remain in a flexible state for a longer period of time than other types of material.



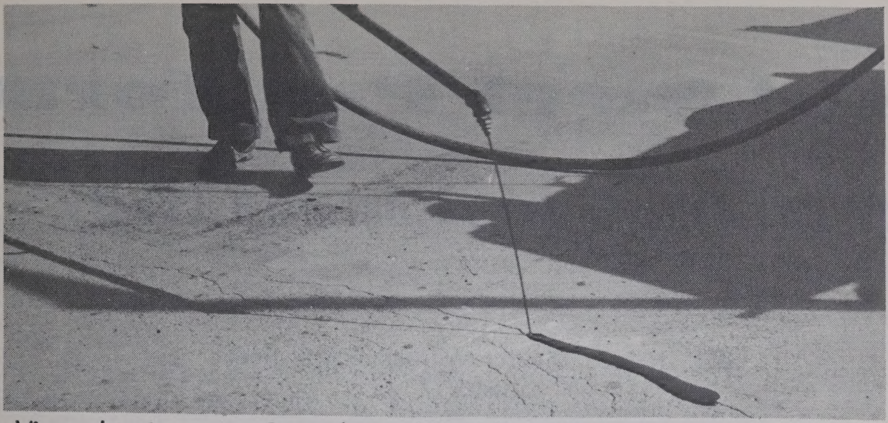
This illustrates the type crack we are speaking of in this report, distinguishing it from other types of maintenance problems which involve patching with pre-mix material, or the seal coat type of sealing. This deals with a specific type of pavement failure. We do not spray this type crack.



The upper half of this crack was sealed properly. In the lower portion we either failed to apply enough asphalt or else the crack became enlarged. In this case we will reseal the crack.



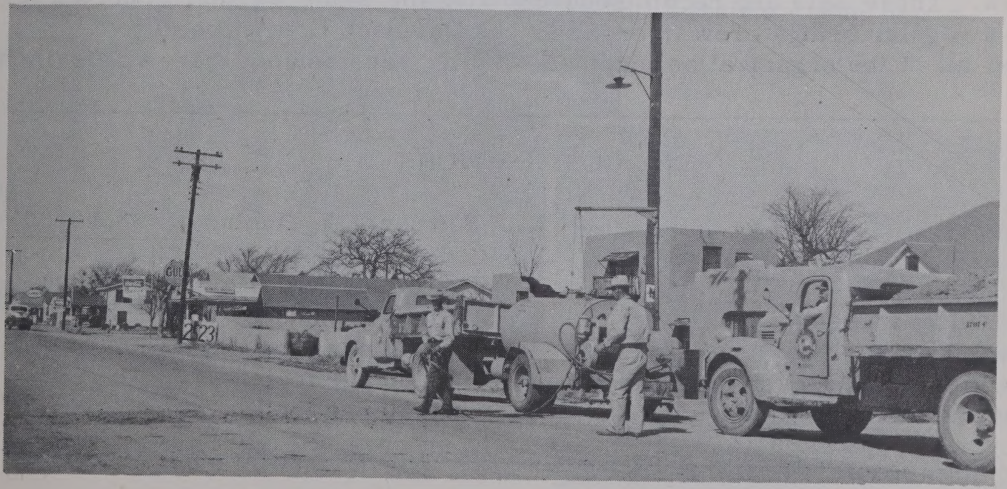
Close-up of crack that had previously been sprayed with asphalt and covered with Number 10 aggregate. The aggregate did not enter the crack, and as a result the crack reappeared and we have a built-up area on the pavement.



Views showing type of nozzle used for filling the cracks. Approximately ten pounds of pressure is being used here, however, pressure can vary for different occasions.

After the cracks are poured with asphalt, blow-sand is liberally applied with a Number 2 scoop. Traffic will dust off the excess sand.

Blow sand is found along the right of way. Traffic forces sand down in cracks and does not build up adjacent pavement.



,Equipment required for this type of operation.

Use of Steel Pan Forms

on Davidson Creek in Burleson County

D.L. Hogan, District Maintenance Engineer
District 17

In 1951, it became necessary to replace a number of timber bridges on Farm Road 60 in Burleson County. It was decided to test the adequacy of pan forms manufactured for building a concrete girder, 30-foot span, State Highway Department Standard C. G.-15.

The project consisted of two bridges having a total of 25 spans and a 24-foot roadway, part of the bridge being placed on steel piling and the remainder on twelve-inch concrete piling. The hand-rail was of the flex beam variety placed on salvaged six-inch angle steel posts.

The work was supervised by Senior Maintenance Foreman J. O. (Bud) Sloan and done entirely with his regular maintenance crew. The two sets of forms used were sufficient on this job, since slack time due to curing could be used on other maintenance work. Three sets are recommended for a regular bridge crew in order to keep all of the organization occupied.

The heavy equipment used consisted of:

2	one-half yard Cranes
1	Fourteen C. Y. Batching Bin
1	Two Sack Mixer

It is very likely that the cost of the batching bin and the extra crane would have paid for the labor necessary to replace them if they had not been available.

The total cost of the bridge was $88 per foot, which includes $4, 626. 58 for detour and $4, 275 engineering charges.

Since the Davidson Creek bridges have been constructed, we have built nine spans on "Old River" on the same road and three short bridges on Farm Road 50 in the same county. The crew has become very efficient at this work and the results are all that could be desired. Very little engineering supervision is necessary and the cost is about the same as that reported for the Davidson Creek Job.

We recommend that a six-inch

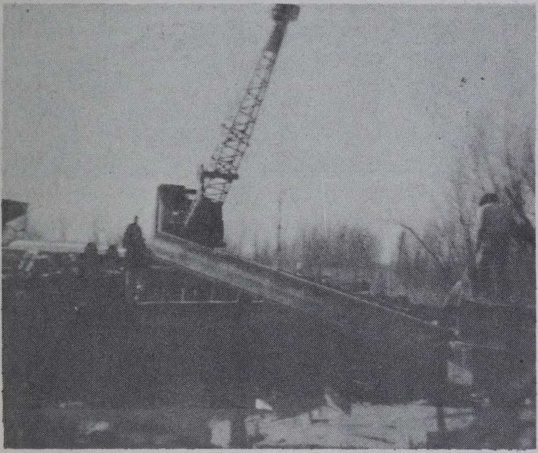
UNIT COST OF WORK

Class A Concrete	$30 per C. Y. (includes $3, 621. 07 charged off for forms, which is one-half of original cost)
Reinforcing Steel	0. 10 per pound
Steel Piling	4. 65 per foot
Twelve-inch Precast Concrete Piling	4. 80 per foot
Cost of one cap and one slab	51. 30 per foot

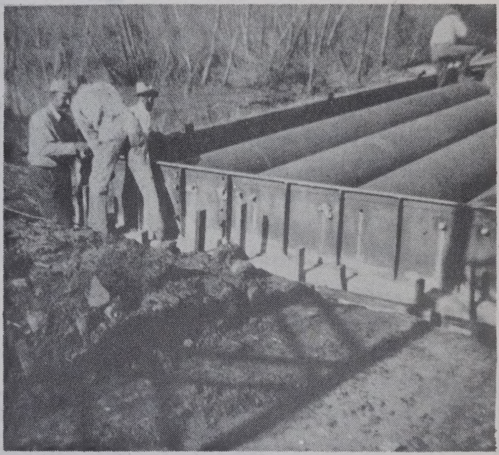
MAN-HOURS USED FOR EACH SPAN

	Erecting Forms	Steel	Pouring	Wrecking Forms
Man-hours	40	30	120	30

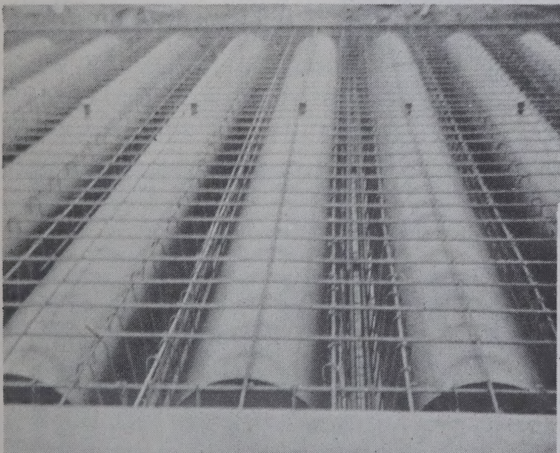
felloe guard with rail or an eighteen-inch curb, as set forth in Design Standard CGC-15, be used, rather than the rail alone.



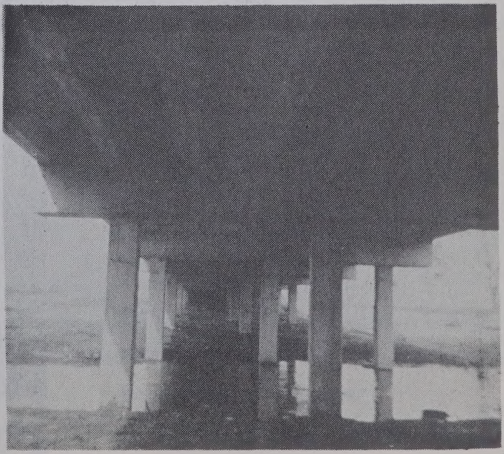
Erecting forms.



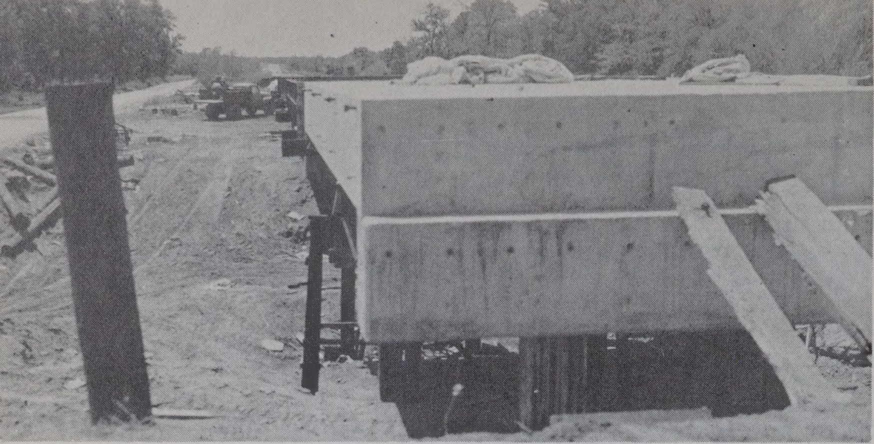
The assembly of pans completed before placing steel.



Complete - ready to pour.

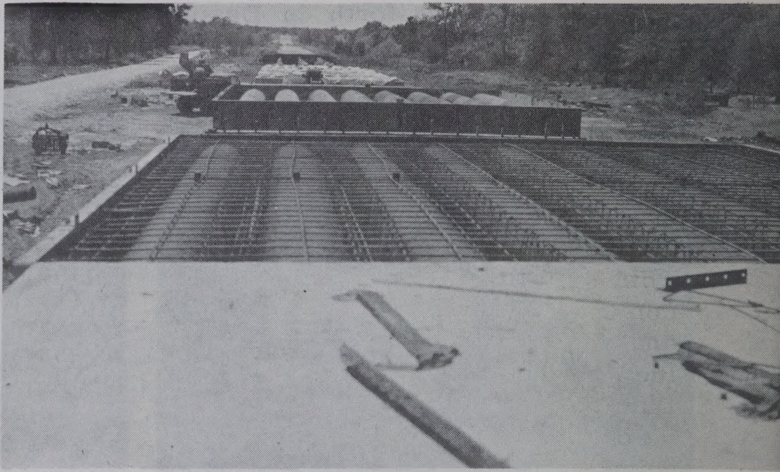


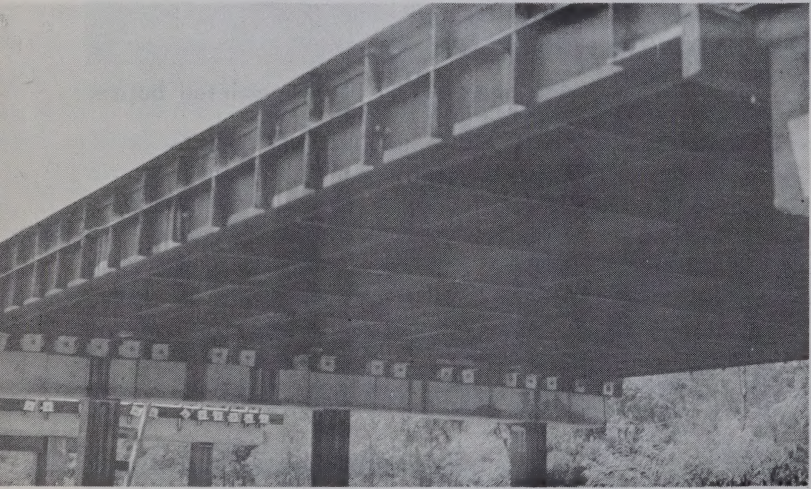
Under side of finished structure.



Lookingwest - completed span at east end of main bridge.

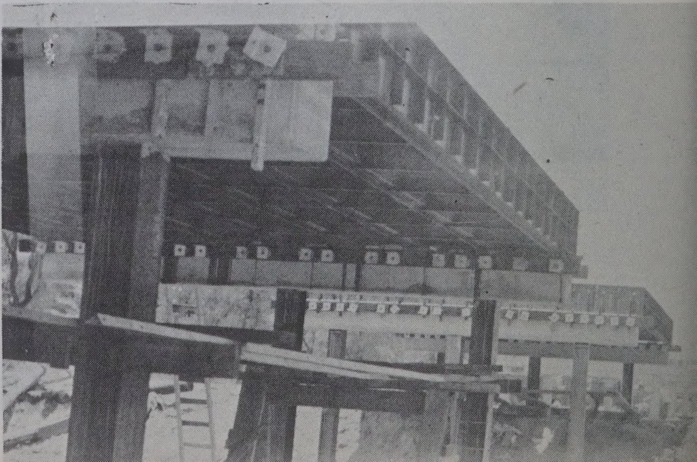
Lookingwest - completed deck and form assemblies.





View of south side showing form assembly.

North side, showing form assembly.



BRUSH CHIPPER

E.W. Mars, District Engineer
District 24

In December, 1952, District 24 purchased a Brush Chipper. This machine cost $2,580 f. o. b. El Paso. We observed a similar machine which was used by a local utility company to grind small limbs, brush, and leaves after trimming trees under the utility lines in the El Paso Valley. During the utility company operations, we obtained some 30 to 40 loads of the chipped brush and used it as a mulch on the medians of U. S. 80 in El Paso. Results from this prompted us to request one of the machines for our own use. This District does considerable tree trimming in the suburban areas around El Paso.

Briefly, the machine consists of a four-cylinder Ford Industrial Motor driving a four-bladed rotor, turning at 2,200 RPM, all mounted on a two-wheel trailer with towing tongue. The rotor blades or chisels are easily sharpened and replaced.

We have gathered a few facts on this machine which may be of interest to other Districts. We have now used the machine approximately eight weeks. The Chipper grinds tree branches (up to five-inch diameter), brush, twigs and leaves so that the largest pieces are about the size of a pencil. Dry, dead material is difficult to grind because of clogging of the discharge stack. The machine is made primarily to handle green material. The machine will take small limbs about as fast as two men can gather and feed them. We find that with two men feeding the previously trimmed branches into the machine, we will gather about two truckloads of chips during the day. Ordinarily we were hauling twelve to fourteen loads of loose branches and brush several miles to the disposal place.

Side view of chipper.

Back view of chipper.

Feeding small brush.

Feeding large limb about five inches in diameter.

Discharging into truck.

Material in truck.

Pile of chipped material dumped on median.

Chipped material spread and ready for soil covering to hold in place.

HOW TRAFFIC LIGHTS CAUSE ACCIDENTS

Even in your city, misused safety devices may be turning streets into deathtraps

By BEN MERSON

Published through the courtesy of Collier's magazine.

The following article is used with the permission of Collier's magazine. Published in the April 18, 1953, issue of Collier's, the article presents the engineering side of the traffic accident problem. It brings out several important facts that, although well known among engineers, are almost completely unknown to the general public and are often unknown or misunderstood by city officials. Some of the examples and results mentioned in the article are more spectacular than the general case, but the point of the article—that traffic control devices and regulatory measures should be established on the basis of factual studies made by trained engineers—is well made.

Wider distribution of information of this type and more general knowledge of the facts cited should be a great help in educating the public to the fact that traffic control devices such as traffic signals should be erected on the basis of factual studies rather than opinions or political considerations. By publicizing the fact that traffic signals kill rather than cure when installed unwisely, a more intelligent outlook on the part of the public should prevail.

NOON on a lazy spring day; along U.S. Route 30 a sedan is passing through the outskirts of the little town of Schuyler, Nebraska. The road is straight as a plowed furrow. A hundred yards ahead, at the intersection of Nebraska 15, the traffic light glows green in the sunlight. The driver maintains a 35-mile-an-hour pace—not fast, but still 10 miles an hour over the speed limit.

Then it happens. A car plunges through the red light on Route 15 into the intersection. Both drivers try to swerve. But it is too late. Steel rips into steel. An instant later each car is a mangled ruin, with both drivers seriously injured.

The accident was the eleventh at the intersection in a year. Citizens of Schuyler were aghast and bewildered. To prevent just such accidents they had erected traffic signals at the intersection—not just one, but four: one at each corner. Yet disaster piled on disaster, until now the spot had come to be known as "Devil's Crossing."

More in despair than in hope, the citizens appealed to state traffic engineer J. Edward Johnston. He made his survey and came up with a solution that shocked the townsfolk almost as much as the disasters on their doorstep. He *removed* all four traffic lights. He *increased* the speed limit from 25 miles an hour to 35 miles. He erected some "Stop Ahead" and "Stop" signs on Nebraska 15. And he left U.S. 30 wide open.

The next 12 months told the story: there was only one minor accident.

The townspeople of Schuyler were amazed. But not Johnston. His study had disclosed that the volume of traffic was too small to justify traffic signals. Besides, the signals infuriated motorists. So did the snail's-pace speed limit. Some drivers subconsciously had rebelled and, ignoring even red lights, drove headlong across the intersection to tragedy.

Schuyler's problem was not unique. With grim variations, it is being repeated daily all over America. Almost every community in the land has innocently baited its street and highway systems with one to a dozen deathtraps. Operating with lethal efficiency, they are helping to kill 38,000 people and injure over a million others every year. The toll is equivalent to the blotting out annually of a city the size of Brownsville, Texas, and the crippling of all the people in a city larger than Boston.

Many people regard traffic mix-up accidents as inevitable. Yet nothing could be further from the truth. Most—almost all—of the tragedies can be prevented. Not necessarily by preachments, or more restrictions, or the building of dream highways. But to a large degree by traffic engineers—men like Nebraska's Johnston. They can eliminate deathtraps, reduce congestion and speed up traffic. They can make room for thousands more cars on roads now filled to overflowing. And with it all, they can cut accidents by as much as two thirds.

The evidence is contained in a recent study of 80 danger spots by the Association of Casualty and Surety Companies, a nonprofit organization maintained by more than 100 capital stock insurance firms to promote public safety. These danger spots, located in 25 states from coast to coast, had been the scenes of 170 fatal accidents during an average two-year period. After traffic engineers went to work, the toll dropped to 60 in a comparable period (and these accidents were all due to the human element—speeding, drunken driving, sudden illness, and the like). Crash injuries and congestion decreased proportionately.

But why don't traffic engineers eliminate the deathtraps everywhere? Largely because of public ignorance, vanity and politics.

A Job the Public Misunderstands

Although traffic engineering became a profession in 1921, few citizens understand its functions. If they have heard of a traffic engineer at all, they usually assume he is a superpoliceman, intent on plaguing them with more regulations. Or else they confuse him with a highway engineer. Actually, the highway engineer is primarily concerned with road building; the traffic engineer is concerned with efficient traffic movement and road safety on all roads—old and new—and keeping them safe under all conditions. Traffic engineering is such a specialized profession that it is taught at only a few major colleges—at Yale and the University of California as a full graduate course, and as an engineering elective at, among others, Iowa State, Cornell, Purdue and the Universities of Michigan and Illinois.

Ignorance about traffic engineering extends even to public officials. Thousands of American communities bequeath the job of making highways safer to any municipal employee who wants it—usually a policeman, but occasionally a clerk or even a versatile sewer inspector. Being untrained, these tyros suffer from the common delusion that all traffic ills can be cured by prescribing more signs and more signals. They have poisoned countless arteries, and possibly even killed more motorists than they have saved.

To add to the toll, hundreds of other communities do not make a pretense at even amateur traffic engineering. Politicians erect traffic lights to ingratiate themselves with voters, while police set up speed traps which help finance the installations. It makes for a steady flow of customers to the traffic court—with side trips to the undertaker.

Neither is the picture too optimistic in some of the more than 85 cities that actually employ traffic engineers. Their departments are decentralized. They have only limited authority. And they can't make their decisions stick.

State governments are somewhat more enlightened. Approximately 40 states now employ traffic engineers. And while they are permitted to work without impediment, their number is woefully inadequate considering the 650,000 miles of road under their jurisdiction. Nevertheless they have made remarkable improvements from coast to coast, as any motorist can testify.

They could do vastly more, except for one frustrating fact: some state administrations forbid traffic engineers to help local communities solve any traffic problem that does not directly involve a state or a federal highway. If local roads in these states are involved, the engineers must keep hands off. New Jersey is an exception; its state government has authority over traffic controls on all roads.

A few states like Nebraska, Ohio, Michigan, Virginia and West Virginia will give communities advice. However, many communities regard such advice as "interference." They refuse to take it. They even have laws against such "interference"—and their roads remain a menace.

But when given a free hand, traffic engineers may end the highway evils. Typical was the problem of Virginia Street, a main artery which crosses the Pennsylvania Railroad tracks on an S-curve in Gary, Indiana. Despite a series of warning lights and signs and a presumably perfect pavement, motorists were constantly colliding head on at the intersection.

More signs were added, including one set back 500 feet from the curve; also two warning blinkers, a bell and several bull's-eye blinkers. But the collisions continued. The toll of injured motorists mounted.

Finally citizens demanded complete elimination of the crossing, a prohibitively costly task. But there seemed to be no other remedy—until traffic engineer Taylor D. Lewis was called in. "Your pavement is too perfect," he told city officials. "The smooth surface causes cars to skid."

The Solution Was Simple—and Cheap

The pavement was roughened—at a cost of $34—and a 13-mile-per-hour speed zone posted. The head-on collisions ceased. The solution was so simple that officials were embarrassed. They needn't have been. In traffic engineering, only a trained eye can see the obvious.

For example, the local authorities in Magnolia, Arkansas, couldn't see why heavy trucks kept hurtling off the road on North Vine Street, a state highway. Some of the trucks overturned. Others jumped the curb and ran across the lawn of a private dwelling. In one year there were 13 such accidents; one driver was killed and half a dozen others were injured.

"It doesn't make sense," town officials told Harvey D. Booth, then state traffic supervisor. "We know that truckmen are the best drivers. Yet most of the victims are truckmen."

Booth's field survey showed why. The crashes occurred at the end of a slight curve. But due to an almost imperceptible downgrade the curve was not visible beyond 300 feet. Local drivers were aware of it. Out-of-town truckmen were not. For them it was a booby trap.

Booth neutralized it by installing reflectorized guard posts along the edge of the curve, erecting a warning sign, and painting a stripe in the road to emphasize further the course of the curve. Total cost—$15. Accidents thereafter—none.

Many cities regard traffic islands as a foolproof panacea. Properly used, they can serve as a haven for the beleaguered pedestrian or as a channel marker for the confused motorist. But when misplaced they can be as perilous as a reef to a ship.

In North Attleboro, Massachusetts, the redesign of a small traffic island, which was causing too many turning movements in the center of the five-way intersection of Route 1 North and Route 1A, reduced the accident rate 94 per cent. Oakland, California, got similar results by redesigning a landscaped island on Lakeshore Avenue. Norfolk, Virginia, did likewise with an island on Commercial Place, which had been built to glorify a horse trough but succeeded only in engulfing motorists.

Even when a traffic island is plainly needed, the size, type and shape call for scientific analysis—and often considerable ingenuity. Consider the experience of Flint, Michigan. During a 33-month period, 45 cars crashed trying to avoid pedestrians crossing the intersection of Saginaw and Louisa Streets. Most of the accidents happened in the evening, when large throngs left a nearby theater.

However, the accidents seemed out of all proportion to the scene. Saginaw Street was 66 feet wide. There were no obstructions. And the street had the very latest type of lighting—nonglare luminaires designed to reflect the light onto the highway rather than on building fronts.

Authorities were baffled—until traffic engineer Henry A. Barnes and experts from the Consumers Power Company came up with a startling disclosure: there was an area in the center of the roadway where persons with dark or gray clothing so blended with the background that they were almost invisible to motorists. Neon signs caused the blind spot. Moreover the road itself, being of dark red brick, had less than a 2 per cent reflection factor.

Repaving the street was financially out of the question. Building a concrete island would take too long. So Barnes improvised. He painted two islands in the center of the street, and while the paint was still wet covered them with white silica sand. Overhead he installed one light.

That did it. The sand reflected the light. The light outlined the islands. And the islands outlined the pedestrians. Cars quit running them down, and running into each other.

Although they save countless lives and dollars, many of these innovations cost little or nothing. The latest example is in New York City, which finally got around to hiring a traffic engineer four years ago. Among the headaches the city bequeathed T. T. Wiley, its current expert, were two-color traffic signals that flash green and then red without a warning yellow light in between.

Two-Color Signals Breed Accidents

Ironically New York had pioneered the safer green-yellow-red sequence of signals now used almost everywhere else. But after introducing them in 1918 the city had promptly abandoned them for the two-color type, which throughout the years remained a prime breeder of accidents: rear-end collisions because of sudden stops, and pedestrians run down when caught in midstreet by a change of lights.

Unable to substitute three-color signals immediately for lack of funds, Wiley substituted ingenuity. He reset the timing of his two-color signals so that instead of an interlude of blackness between the green light and the red, they momentarily showed *both* red and green.

Tested at 100 intersections, the warning combination reduced accidents 14 per cent. Now all of the city's 7,600 signalized intersections are being converted to this system—without cost.

Equally ingenious was the method used to break the bottleneck around Pershing Square in Providence, Rhode Island. Cars and trucks poured in day and night from six directions, then overflowed as a creeping mass onto U.S. Route 1, the nation's oldest and most traveled highway, which cuts through the square. At times it required 45 minutes for a car to travel a few hundred yards. Accidents were frequent, particularly right-angle collisions; and these, coupled with head-on crashes, brought injury to 23 persons in less than 10 months.

Called in to wrestle with the problem, engineer P. S. Mancini went to work methodically. Clocking the flow of traffic, he charted peak periods, turning movements, the habits of local and out-of-town drivers. He studied parking and parking regulations, signs and signals—and whether they were flouted by more than the 15 per cent who will always disobey the law.

He surveyed the scene as a pedestrian, then as a driver, and combined both viewpoints in a search for hidden perils. Detailing each crosswalk, lamppost and hydrant, Mancini drew a map of the area to scale, including curves, grades and approaches. And on the map he superimposed a complete diagram of every accident.

After analyzing all the facts, Mancini finally came to this conclusion: there was nothing wrong with Pershing Square that $25 couldn't right.

Which is exactly what it cost: $15 to shift a traffic circle that hogged the middle of the square, and $10 to remove two beacons that cast long and deceptive shadows. The rest of the job cost nothing. It merely called for a ban on angle parking, and making some two-way streets one-way.

New Assignments for Traffic Cops

The results were dramatic. Accidents decreased 83 per cent and congestion was reduced so sharply that two policemen assigned to traffic duty were transferred elsewhere to keep them busy.

From Mancini's methods, it is obvious that traffic engineering is no job for dabblers. The professional engineer is trained to root out the underlying causes of accidents and congestion, not simply relieve surface symptoms. The only approach is the technique used by Mancini, based on scientific principles that take nothing for granted. There are no pat solutions. The engineer has basic theories that apply generally. But they do not always apply specifically, even when the circumstances seem identical.

"And when these engineering theories are misapplied," says Robert J. Allen, chief traffic engineer of the Association of Casualty and Surety Companies, "the elimination of one deathtrap can easily cause serious new problems elsewhere."

Politicians, amateurs and bunglers are endangering lives in many communities today through just such inept handling of traffic problems. But as a private citizen you can help remedy the situation.

If your city is one of the few that employs a traffic engineer, make it your duty to see that he is not hamstrung. Join with your fellow citizens in demanding that he be given full power to make his decisions stick. And don't carp if his decisions violate your own notions of parking, speed limits or one-way streets. Silence then may save your life as well as your breath.

On the other hand, don't spare your breath if your state engineer is forbidden to help a community remove a local deathtrap. Let every candidate for public office know that he cannot get your vote unless he works to end such practices, which are designed to protect local autonomy while blindly endangering human life.

At best, state aid is inadequate. There are too few state traffic engineers, and too many cities and towns. And it is in the cities and towns that most of the nation's deathtraps lie hidden. To eradicate them, communities must hire their own experts. According to the President's Highway Safety Conference, every town with a population of less than 50,000 should have a part-time traffic engineeer, whose services may be shared with a neighboring town. Cities of from 50,000 to 100,000 need a full-time engineer. And cities of over 100,000 should have a traffic-engineering division and staff comparable to a department of public works.

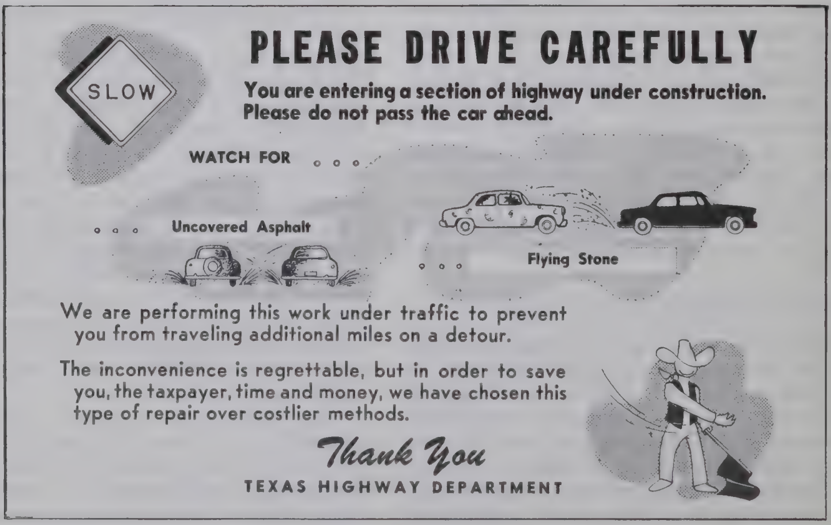
The cost is surprisingly small. Including salaries and highway improvements, it averaged less than 70 cents a year per person in 16 cities surveyed in 1951 by the National Safety Council. This puny expenditure saved these cities millions of dollars in property damage and hundreds of lives. Your community can do likewise. And several organizations will—without charge for their services—show it how.

At the request of your local officials, the Automotive Safety Foundation, 700 Hill Building, Washington, D.C., or the Association of Casualty Companies, 60 John Street, New York City, will send a team of experts to make a survey, analyze your problems and lay out a blueprint for co-ordinated traffic engineering. Similar aid is provided by auto clubs in California, Illinois and New York.

In an emergency—say a danger spot whose removal cannot wait for an over-all survey—the Institute of Traffic Engineers at Yale University will recommend a private consultant. And even if your town is bankrupt, state traffic engineering aid is sometimes available.

D. Grant Mickle, of the Automotive Safety Foundation (a nonprofit group financed by the automobile, tire, steel and petroleum industries), sums it up this way: "The volume of cars today is a decade ahead of expectations, while the design of our roads is a decade behind. Traffic engineering can bridge the gap. But the initiative is up to the individual citizen. Until he takes it, deathtraps will continue to take their toll." ▲▲▲

THE NEW "PLEASE DRIVE CAREFULLY" CARD


SLOW
WATCH FOR ...
... Uncovered Asphalt
... Flying Stone

PLEASE DRIVE CAREFULLY

**You are entering a section of highway under construction.
Please do not pass the car ahead.**

We are performing this work under traffic to prevent you from traveling additional miles on a detour.

The inconvenience is regrettable, but in order to save you, the taxpayer, time and money, we have chosen this type of repair over costlier methods.

Thank You

TEXAS HIGHWAY DEPARTMENT

Brazos River—Bridge

Arnold Staubach, Senior Field Engineer
Bridge Division

The main crossing of the Brazos River (State Highway 90 between Navasota and Brenham) about two and one quarter miles upstream from the historic town of Washington will consist of a seven-span plate girder unit and concrete floor, 1,323 feet long, supported on seven solid shaft concrete piers and the west abutment. The eight substructure units were built in 1950 and 1951. The superstructure and east approach trestle are now under contract.

The piers and abutments were founded on conventional steel H-beam piling driven to a depth adequate for bearing capacity and freedom from deep scour. The bases of all units except piers 3, 4, and 5 from the east were placed well above the usual low water elevation +150, so that normal methods of excavation and shoring could be employed. The base of pier 3, being at elevation +140 and 250 feet from the water's edge, presented no particular problem of water control.

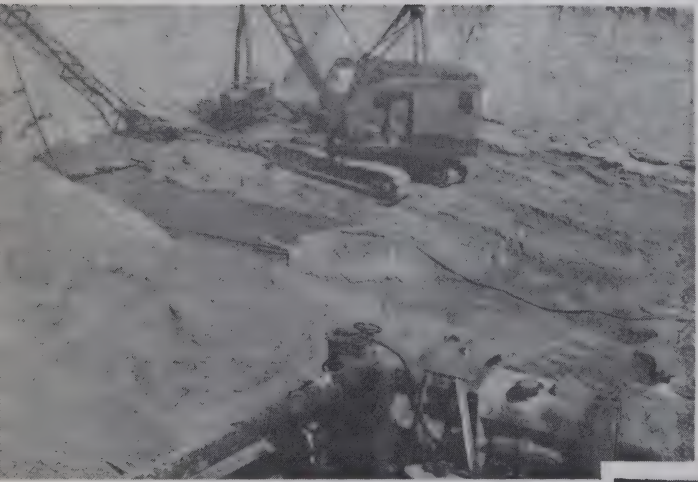
The bases of piers 4 and 5, 250 feet apart on the east and west banks of the low-water channel, were to be carried down to elevation +115, 35 feet below low-water elevation and 17 feet below stream bed, the lower 4 feet to be a concrete underwater seal, on the assumption that watertight cofferdams would be used so that they could be unwatered to permit completion of the piers in the dry.

The contractor elected, however, to use the well-known well-point system at pier 4, and was successful in lowering the water table the required amount in three stages. As the alluvial materials varied from coarse-grained sand to silt and clay, with a silt zone at elevation +131, and a clay zone between elevations +125 and +120, the unwatering subcontractor had to use considerable ingenuity in arranging the well-points. Details of the operation have been ably described by R. A. Seyle, Engineer Assistant, Texas Highway Department, in Engineering News-Record for October 11, 1951. Proximity of the west high bank required the lower stage of unwatering of pier 5 to be accomplished by use of a concrete caisson.

The contractor was T. M. Reeves and Sons, Austin, with the Moretrench Corporation as subcontractor for unwatering. L. A. Peterman, Senior Resident Engineer, was Project Engineer, under the general direction of John E. Blair, District Engineer, District 17.

Looking north, showing stage 1 header at right, stage 2 header at left, and crane and drill rig.

Looking east, showing stage 1 header and plant.

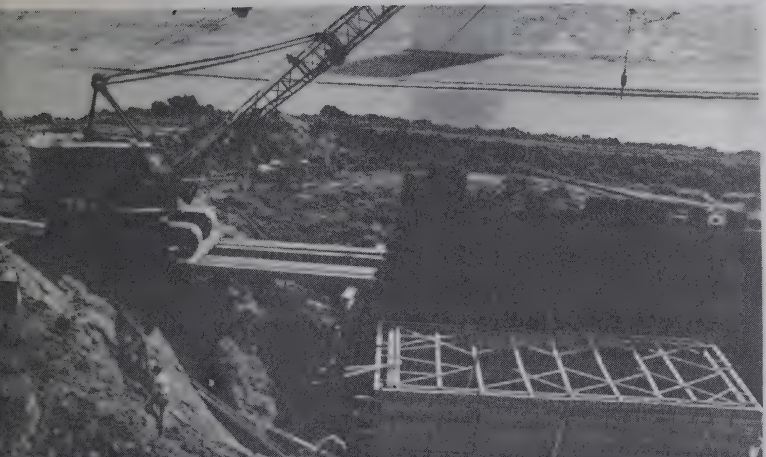


Looking northeast, showing pump on stage 1 header in foreground, stage 2 header at right, and pump on stage 2 header at left.

Looking northwest across channel, showing discharge from pump on stage 1 header.

Looking north, showing stage 1 header in right background, and stage 2 header at left.

Looking northwest, showing stage 1 header in right foreground, pump on stage 2 header and discharge in center.



Looking east, showing forms for concrete caisson for Pier 5. Completed Pier 4 is in background.

Looking east, completed Piers 1, 2, 3, and 4.

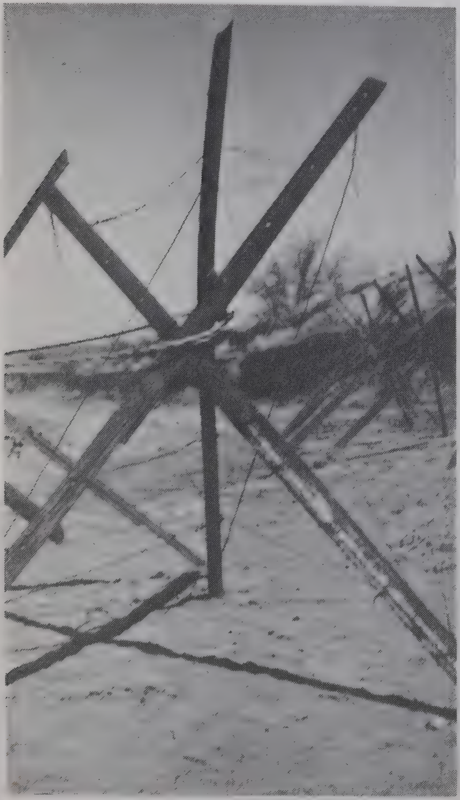
SALVAGED MATERIALS

J. D. Willson, Senior Maintenance Superintendent
District 5

A jetty installation just upstream from the new bridge over Los Linguish Creek (F. M. 1065 south of Quitaque) is shown in pictures 1, 2, and 3. These jetties were made from old used grader blades and salvaged guard cable and were installed by Sanford Webber, Senior Maintenance Foreman at Floydada, and his men.

Picture 4 shows a pump house under construction at the new maintenance warehouse site in Littlefield. This building has a double wall made of salvaged paving brick. It will be very substantial and freeze-proof. It is being built by Henry Edmonds, Senior Maintenance Foreman at Littlefield, his men, and some men from District Headquarters.

Pictures 5 and 6 show a walk leading to the Spring at Silver Falls roadside park in Blanco Canyon on U.S. 82 east of Crosbyton. This walk was constructed of salvaged paving by Clay Campbell, Maintenance Foreman at Ralls, and his men.



CENTER STRIPING

W.L. Ford, Maintenance Superintendent
District 22

Numerous methods have been tried in placing center stripe since the Department first started striping highways, and the present results over the state indicate that quite a bit of thought and effort have been put into the job.

The method we now use in placing a raised center stripe in District 22 has been in use for several years. The first operation is the locating of the center points. This is done by finding the center of the pavement by using a tape and painting a small yellow dot on the center of the pavement. After the section which is to be striped has all the points down, a Number 6 gauge wire from 500 to 1,500 feet long is stretched along the highway three inches off center and aligned on the best average of alignment of the center points. The wire is held in place by tacking down with 6 d common nails.

A yellow paint pilot line is used on extremely dark colored surfaces and RC-2 asphalt is used on the lighter colored surfaces. This pilot line is placed by using a three-wheel pilot line cart, with the front wheel grooved to ride on the wire for alignment and dispense the asphalt or yellow paint on the center of the pavement.

RC-2 cutback asphalt with a curing index of 25 to 40 is used on all striping, and is applied by a truck-mounted distributor which pushes the center stripe machine in front. The center stripe machine is equipped to paint a center stripe four inches or six inches in width, with a four-inch auxiliary stripe, with the auxiliary stripe guns being mechanically operated by cams to automatically paint twenty-foot stripes with 40-foot skips between them. The auxiliary spray bar guns are so adjusted that they stagger the stripes when painting a four-inch stripe on both sides of the center line.

The RC-2 asphalt is applied at the rate of from 35 to 65 gallons per mile of continuous six-inch center stripe. The low application is used on smooth surfaces, with a bleeding tendency or when white stone is to be used for the cover stone. The higher rate of application of asphalt is used on dry and open surface pavements.

Immediately following the center stripe machine is the aggregate spreader that is pulled by a three-cubic-yard dump truck, and has a small roller attached to trail from the back of the spreader box. The aggregate is applied at the rate of two and one-fourth cubic yards per mile of six-inch stripe.

This procedure, so far, has given excellent results. The stripes have been very straight and have had good lasting qualities.

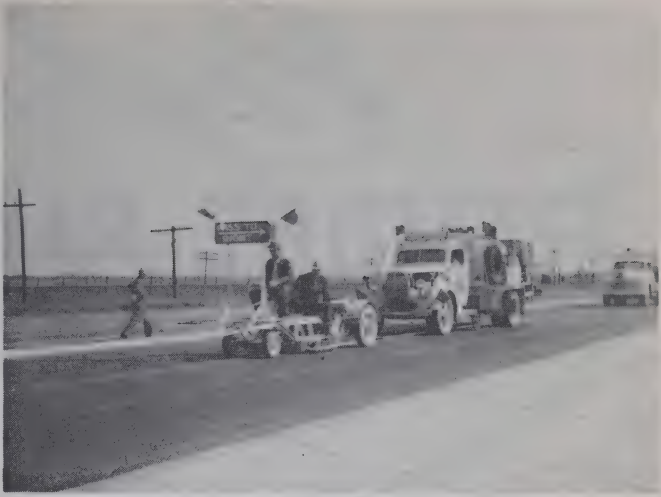
I would like to add a few remarks which Mr. Ford has not included in his article. In the first place, as you well know, there is very little delay in the placing of center stripes in this district on roads which have been resurfaced. I think this is particularly important regardless of the volume of traffic, width of pavement, etc.

Secondly, we endeavor at all times to place a stripe which is presentable and as nearly perfect as possible. I will have to admit that last summer we secured some rather poor work in Real County on R.M. Highway 337, and on a section of U.S. 83 in the northern part of Uvalde County; however, this condition has been corrected and the striping crew has been since that time, and is now, securing a center stripe and barrier which in my opinion cannot be excelled.

In the pictures you will note that the black center stripe does not contrast too well with the limestone rock asphalt pavement, but with a few months weathering this condition improves and in fact after six or eight months offers a much better contrast than does the white paint.

M. B. Hodges, District Engineer, District 22.

Yellow paint pilot line on freshly bladed limestone rock asphalt premix surface.



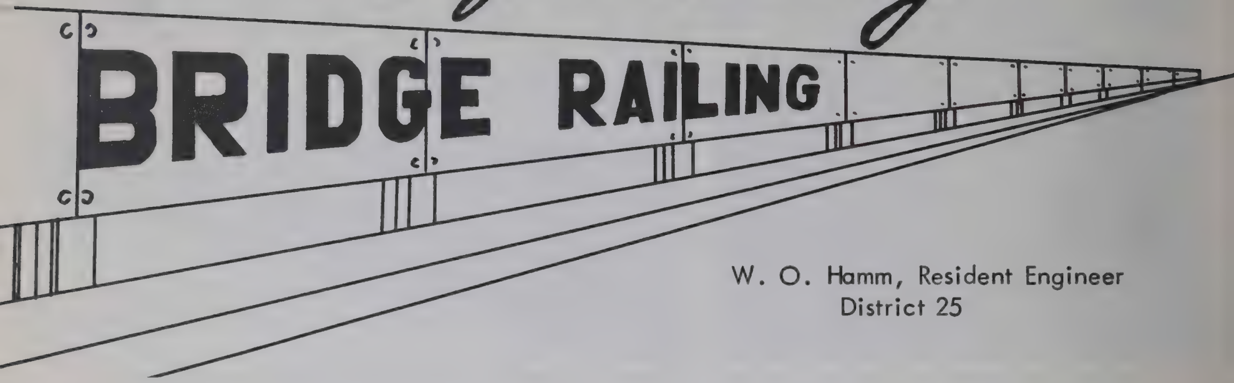
Center stripe machine with 800 gallon distributor followed by aggregate spreader.

Aggregate spreader from rear.

Three cubic yard dump truck with aggregate spreader.

Center stripe on limestone rock asphalt premix surface.

Replacing BRIDGE RAILING



W. O. Hamm, Resident Engineer
District 25

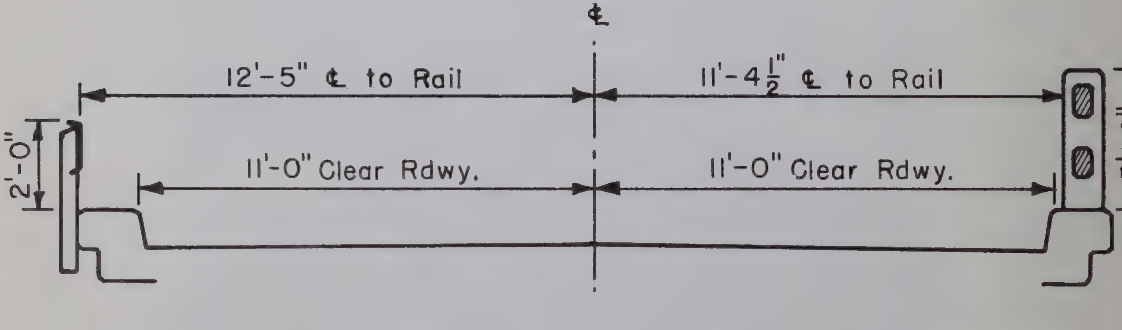
It is believed that replacement of the heavy reinforced concrete rail on Prairie Dog Town fork of Red River Bridge increased the over-all safety of the structure enough to merit discussion.

The railing on this bridge located on U. S. 287 north of Estelline, Texas, in Hall County, was replaced with a lighter steel rail.

It is apparent that just replacing the railing of the bridge did not increase the clear roadway of the structure; however, the distance between rails was increased 2 feet, 1 inch which did provide additional width for overhanging loads and truck beds, thus permitting them additional passing space when meeting oncoming vehicles.

From Figure 1 it is noted that old rail was mounted on the curb. It stood 3 feet, 4 inches above the curb and was massive in appearance. In crossing a bridge of this length (2, 553 feet), the old railing has a claustrophobic effect on operators of a majority of vehicles, causing them to drive as far away from the railing as possible, and when meeting oncoming vehicles numerous accidents have been caused by either crowding oncoming vehicle into the side of bridge or pulling back so sharply that they collided with the side of the bridge. As the new railing is 1 foot, 4 inches lower, and the rails are 2 feet, 1 inch further apart the psychological barrier of crossing the bridge has been greatly reduced, if not removed. The new railing effects a broader appearing structure and gives vehicle operators a safer feeling in utilizing the clear roadway width.

Figure 1



SECTION SHOWING NEW RAIL SECTION SHOWING OLD RAIL

A scale drawing of both old and new railing. Note how new railing gives illusion of wider bridge.

Figure 2
Shows the new railing attached to outside of curb, and position of post of old railing.

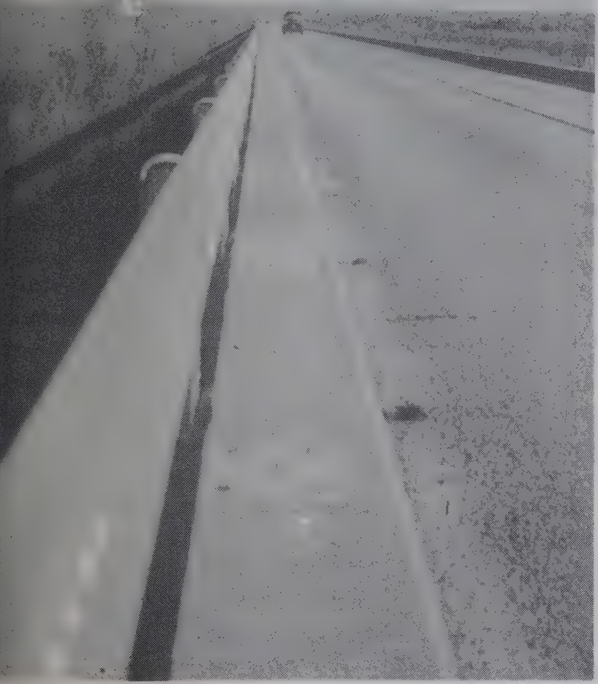
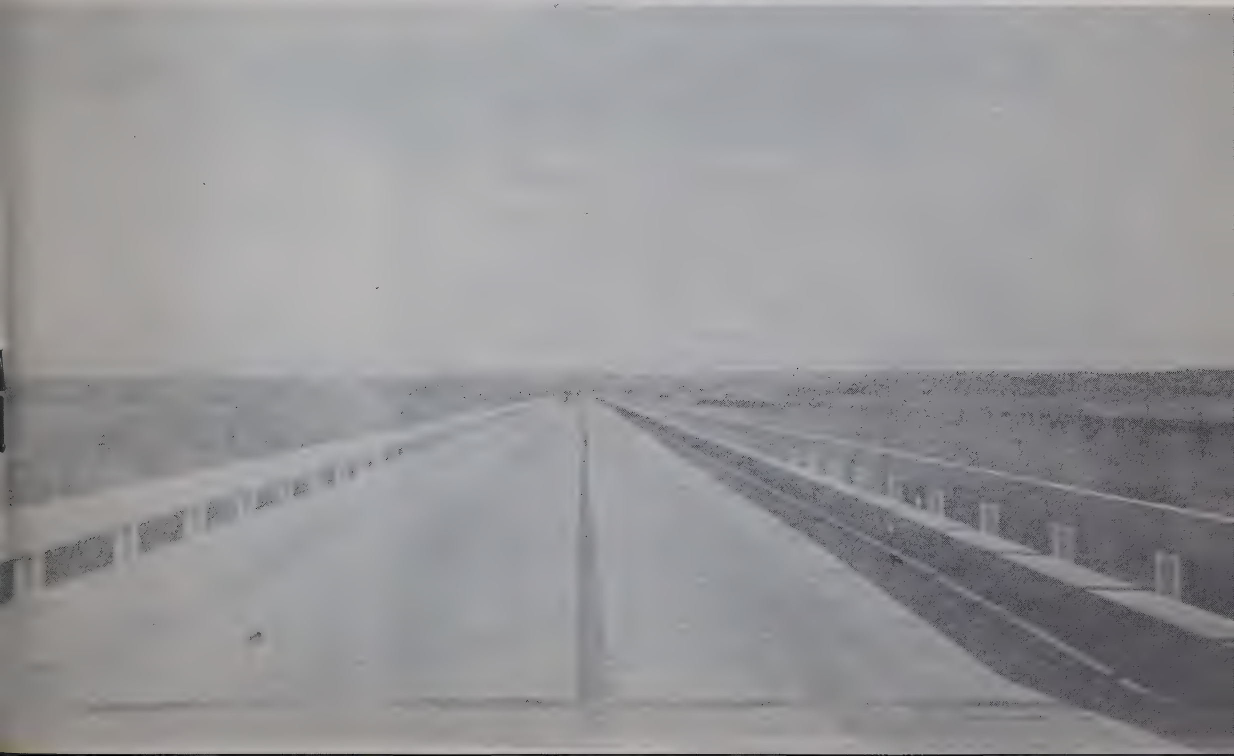


Figure 3
General view of structure with new railing.



1952 TEXAS TOURIST INDUSTRY

Foreword

This report on recreational travel has been prepared in the interest of the general public. These data were collected by means of a proven and accepted scientific survey conducted through the Highway Travel Information Bureaus. Evaluated facts were used in every instance as a basis for all material presented. This report is confined primarily to out-of-state tourists visiting Texas in 1952 and does not include a complete breakdown on recreational travel originating in Texas since certain pertinent facts on intrastate travel are not available.

D. C. Greer,
State Highway Engineer

Facts ✓ ABOUT TEXAS TOURISTS

An average of 8,539 tourist vehicles entered Texas each day in 1952. The Texas Highway Department was able to provide many of these parties with travel aids and increase the tenure and enjoyment of their trip.

Travel miles of the visitors who stopped at Travel Information Bureaus were increased 10% by informed attendants and promotional material.

SERVICES RENDERED TO TRAVELERS

● **Travel Information Bureaus at major entry points**	**145,000**
● **Free Mailing Services**	**162,000**

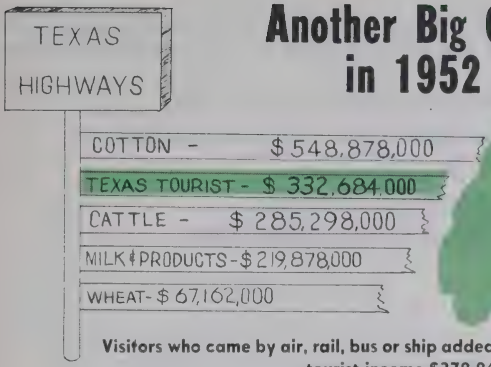
MATERIAL DISTRIBUTED

Official Highway Travel Maps	450,000
Chamber of Commerce Pamphlets	35,000
Texas Vacation Events Pamphlet	34,000
"Outsanding Facts of Texas" printed sheet	50,000
Texas State Parks Guide	15,000

In addition, the Texas Highway Department promoted free travel stories about Texas in such magazines as the AMERICAN, HOLLAND'S, in BELIEVE IT OR NOT features, and others. Photographs depicting Texas highways and scenic attractions were also furnished to 43 other major publications and television programs. Exhibits featuring vacation travel were shown to 2,750,000 people at Texas fairs and expositions by the Department.

Figures ✓

Another Big Crop in 1952

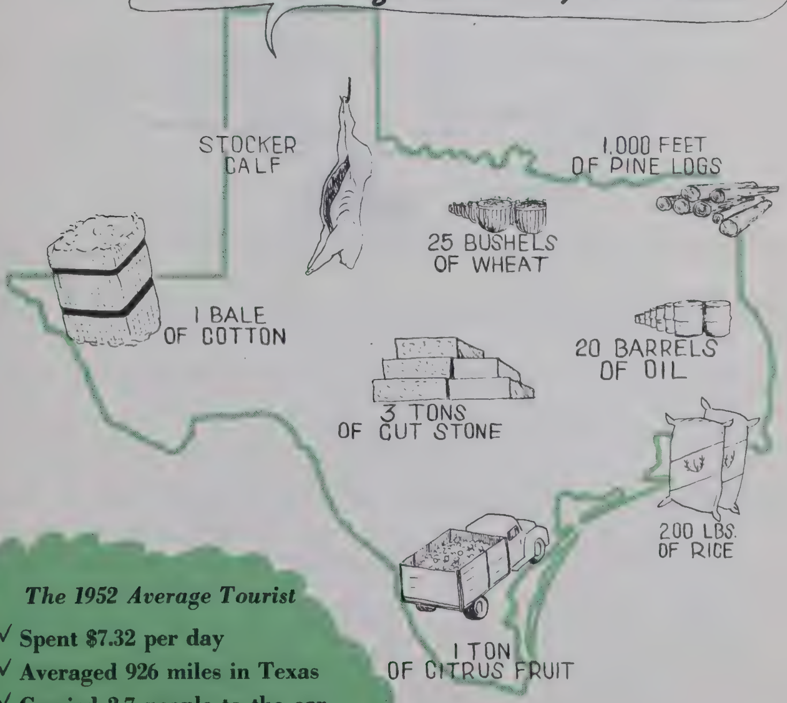


8,416,000 visitors came in 3,117,000 cars

Visitors who came by air, rail, bus or ship added $46,160,000 making the total tourist income $378,844,000.

TEXANS ALSO SPENT $398,000,000 IN TEXAS WHILE TRAVELING 6.3 BILLION RECREATIONAL MILES

Worth of Average Tourist Party Across Texas



The 1952 Average Tourist

- ✓ **Spent $7.32 per day**
- ✓ **Averaged 926 miles in Texas**
- ✓ **Carried 2.7 people to the car**
- ✓ **Stayed 5.4 days**
- ✓ **Left $106.73 in the state**

Trends ✓

1951
1952

In 1952, 8,416,000 visitors entered Texas in 3,117,000 cars at the rate of 356 cars per hour. The average tourist spent $7.32 per day, traveled 926 miles and stayed 5.4 days.

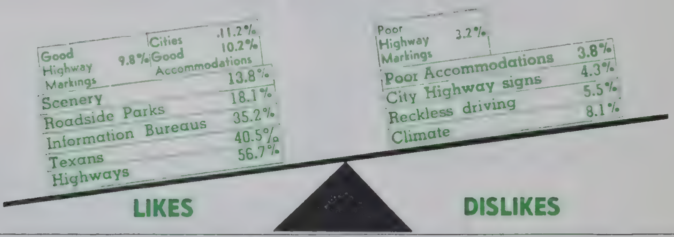
NOTABLE TRENDS SINCE 1951

- **Spent more money per visitor (13c more per day)**
- **Visit in Texas 5% or 7 hours shorter**
- **Number of tourists 8% or 740,000 less**
- **The net loss in 1952 amounted to $42,516,000**

WHY . . . Fewer tourists and a $42½ Million loss?

This overall decrease might be attributed to:

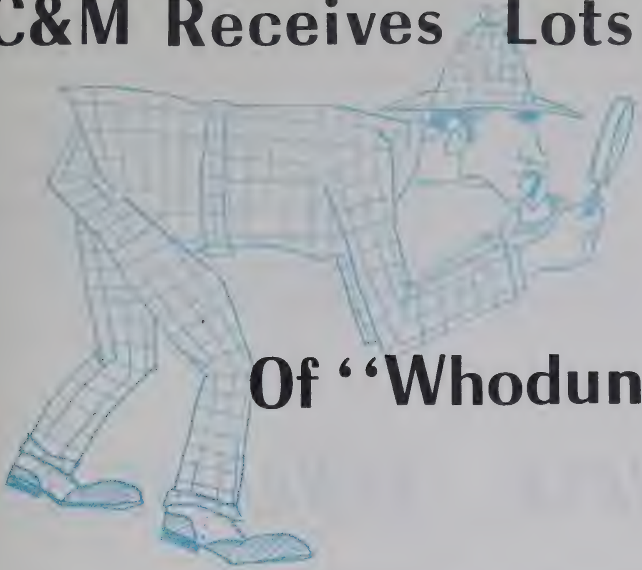
- ✓ **Widespread rumors of epidemics**
- ✓ **Periodic travel trend toward other areas**
- ✓ **Unusual drouth conditions**



STATISTICAL BREAKDOWN BY MONTH

Month	Size of Party	Daily Expenditures Per Person	Purpose of Visit				First Visit to Texas		Length of Stay	Daily Expenditures Per Party
			Enrt.	Bus.	Vac.	Per.	Yes	No		
January	2.78	$7.19	39%	7%	36%	18%	43%	57%	5.68 days	$20.00
February	2.63	7.87	35%	10%	44%	11%	49%	51%	6.30 days	20.67
March	2.52	7.46	31%	9%	44%	16%	45%	55%	6.04 days	18.80
April	2.47	7.79	31%	11%	38%	20%	47%	53%	5.38 days	19.23
May	2.51	7.58	34%	11%	40%	15%	42%	58%	5.02 days	19.04
June	2.95	7.56	27%	8%	45%	20%	44%	56%	4.87 days	22.29
July	3.06	6.36	27%	9%	45%	19%	47%	53%	5.38 days	19.45
August	2.99	6.49	25%	8%	46%	21%	44%	56%	5.24 days	19.40
September	2.82	7.20	25%	10%	45%	20%	42%	58%	5.18 days	20.30
October	2.59	7.60	29%	11%	42%	18%	42%	58%	5.50 days	19.79
November	2.49	7.16	38%	9%	37%	16%	45%	55%	4.90 days	17.82
December	2.51	7.62	47%	8%	31%	14%	38%	62%	4.79 days	19.13

C&M Receives Lots Of ''Whodunit'' Stories



C & M would like to request the assistance of all contributors in solving the many "whodunit" articles received. These are the articles submitted without the name of the responsible individual.

It is the policy of C & M to give a by-line to the author and any other individuals who actually assisted in the preparation of material used. In many cases, material is submitted without any mention or indication of the employee who prepared or wrote the story.

All reporters are urged to include the name of the employee, or in some cases, the group who were actually responsible for the article and material submitted. C & M would like also to give photographic credit if the pictures were made by departmental personnel other than the author. If an employee has developed an idea which has proven sound and is newsworthy, he might describe or tell his story to a reporter who would actually write the article. In such cases, both names should be submitted along with titles in order that each might be given proper credit.

C & M BELIEVES THAT IN RESPECT TO ITS CONTRIBUTORS CREDIT SHOULD BE GIVEN WHERE CREDIT IS DUE.

OVERWIDTH MEMORANDUM FORM

E.D. Parmer, Assistant District Engineer
District 20

Several years ago some of the house movers in this area damaged bridge rails and highway signs to some extent, and at that time we adopted the policy of making it a requirement on the permit issued that the house mover move his load only under the supervision of the maintenance foreman in whose section he was moving. The requirement was typed on the face of the permit and the house mover was instructed to contact the foreman and to have him on hand while he was on the highway in order to make the permit legal.

Just recently, we found out that some of the movers were not contacting the foreman and also that some of the information the movers were giving us at the time they secured the permit was not always the correct information.

The memorandum form was designed by Harry Gray, Chief District Accountant, and mimeographed for use to be sure that the foreman was contacted on each move, and so that we could be sure that the information as to the route traveled and the width of the house would be accurate at the time the decision was made as to whether the permit could be granted or could not be granted. The surprising thing is that the houses that are being moved in this area at the present time are considerably wider than those which were moved before we started using this mimeographed form. We do not know whether all of the small houses were moved before the form went into effect or whether the information we are now securing is more accurate.

The form was originally designed for use only with the movement of overwidth houses; however, we have used it for any overwidth load where the width of the pavement, the width of the load, and the traffic count was such that better control could be obtained if one of our representatives was with the load while it was being moved. We believe that the form is self-explanatory except for the fact that the copies are retained in the District Office until the original is returned by the foreman, at which time the copies are destroyed. This procedure assures us that the mover does actually contact the foreman.

MEMORANDUM

____________________, Texas,

____________________, 19___.

To Foreman ______________________________

We have today issued Permit No. __________ to ______________________________ for the movement of an overwidth load, which is to be moved under your supervision. Please check the permit, supervise the movement (or instruct one of your employees to supervise it), and complete the information requested below. Then mail this memorandum to the District Office not later than the day following the day on which the movement is made.

W. E. Simmons,
District Engineer,

By: ____________________________

Actual width of load (including extensions. It will be necessary to measure the load to get this information) : ____________________ Permit shows ______________

This movement entered highway right of way at __________ AM/PM on ____________, 19____,

and left highway right of way at ___________ AM/PM on ______________________, 19____,

Total time on the highway was _____________ Hours _________________ Minutes.

What route was used in the movement? ____

____

____

Is this the route shown on the permit: ___________________________

Was traffic handled satisfactorily: ___________________________

Was there any damage to any part of the highway or bridges: _______________________

Remarks and description of damage, if any: ____

____

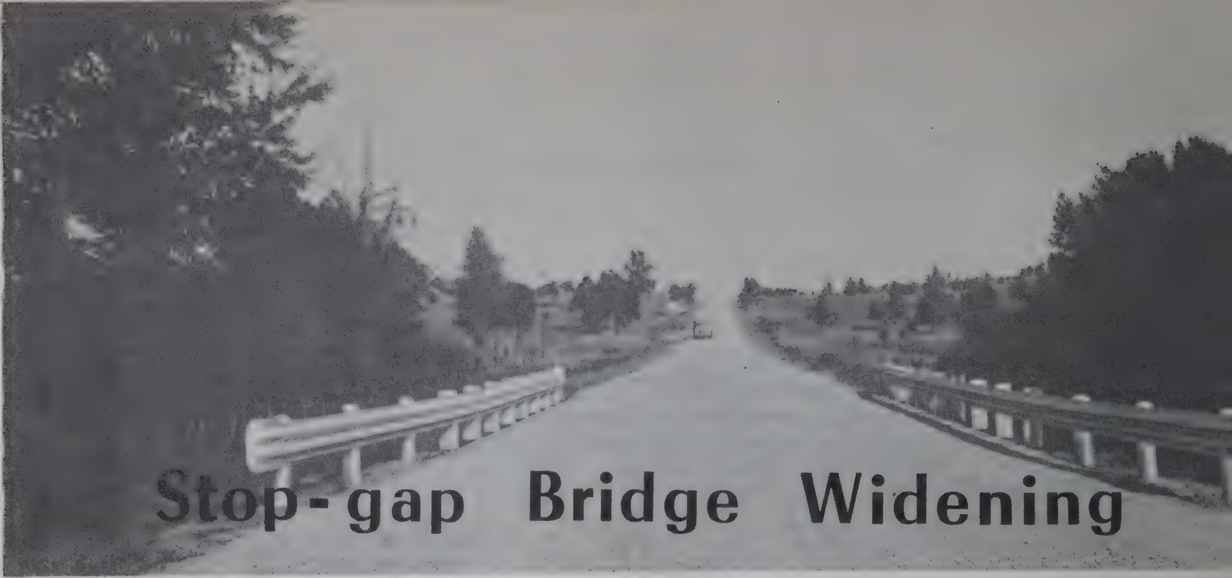
____

____

Signature of person supervising the movement ____________________

Approved by: ____________________________
Foreman.

Instructions to permit clerk: The top portion of this form is to be completed in duplicate at the time you issue the permit for all loads of excessive width. The original is to be given to the person securing the permit with the request that he hand it to the Foreman or the Foreman's representative when they meet at the location of the load. The duplicate is to be marked "COPY" in large letters and is to be mailed to the District Office on the day the permit is written.



Stop-gap Bridge Widening

Gilbert A. Youngs, District Engineer
District 19

Through the medium of maintenance betterment projects, many miles of old sixteen-foot and eighteen-foot pavements over the state have been reconditioned and widened to twenty, twenty-two, or twenty-four feet in the past several years. Such stop-gap measures are very beneficial but usually make the narrow bridges stand out menacingly as death traps.

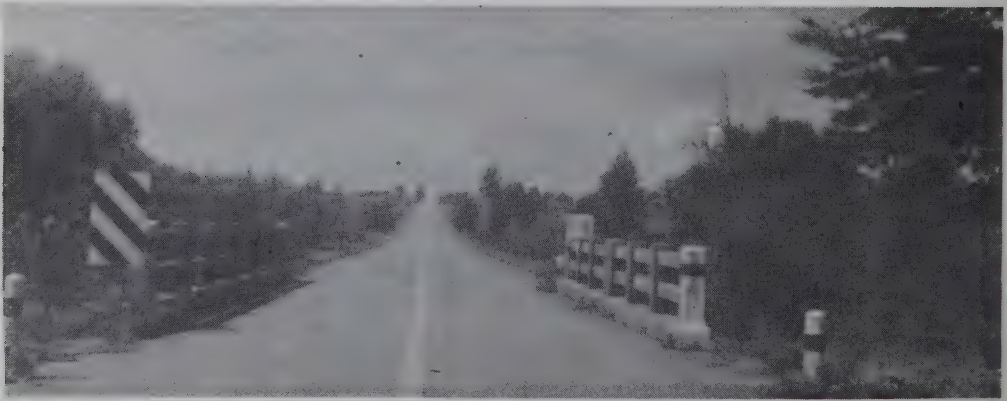
It is often possible, at very little expense, to obtain from two to three additional feet of width on concrete structures by removing the tops of curbs and the high railing and placing steel plate railing on posts bolted to the outside of the structure. The over-all apparent effect is that the structure seems to have been widened even more. The actual and psychological benefit is great.

This treatment of a multiple box culvert on Highway 8 north of Linden, Cass County, is pictured where the structure was widened from eighteen to twenty and one-half feet.

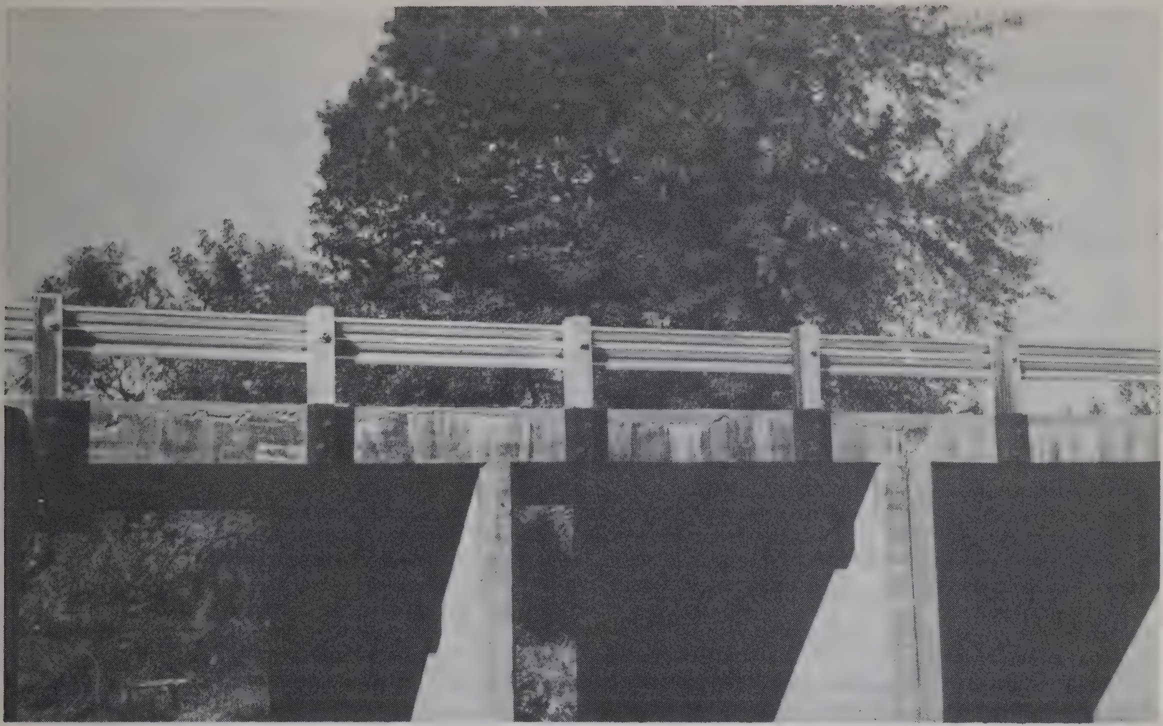
Picture 1 is a motorist's view of the completed job.

Picture 2 shows the structure with its narrow roadway, curbs, and high railing. Rail was removed and curbs cut off just below the grade of the surfacing. Cold mix asphaltic concrete was later used to level this section and fit it in with the roadway surfacing.

Pictures 3 and 4 show details of the new railing. Posts are six inches by eight inches, three feet, five inches in length, and of salvaged material. Bolts are three-fourths inch and were placed in drilled holes in the concrete large enough to accommodate the bolt head and washer. The bolts were then grouted and allowed to set prior to placing the posts.

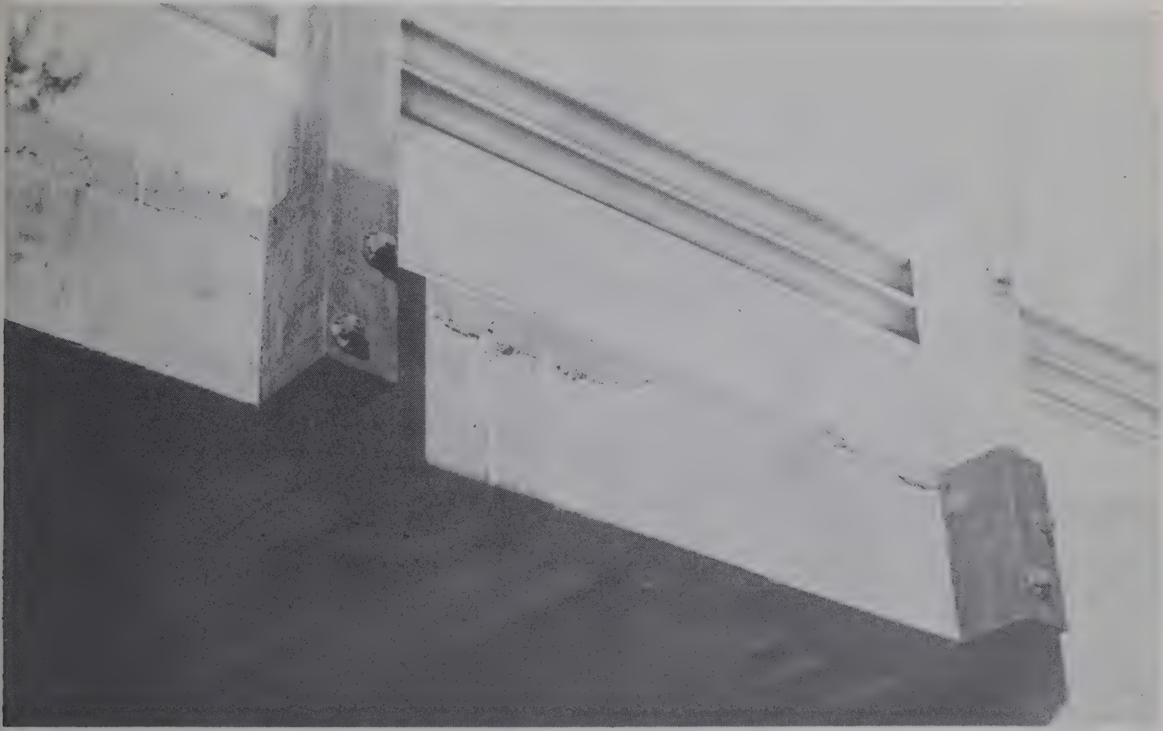


Before widening, this multiple box structure on State Highway 8, north of Linden, had an eighteen-foot roadway and high concrete railing.



The railing and tops of curbs were removed and a steel plate railing was installed, with timber posts bolted to the outside of the slab.

The posts are salvaged six-by-eight-inch timbers three feet, five inches long. Bolts are grouted in holes drilled in the slab.



Accident Report No. 52-243
Involving: M. M. Truelove, Skilled Laborer
Refugio, Texas
Cause: Gas fumes from motor on end loader

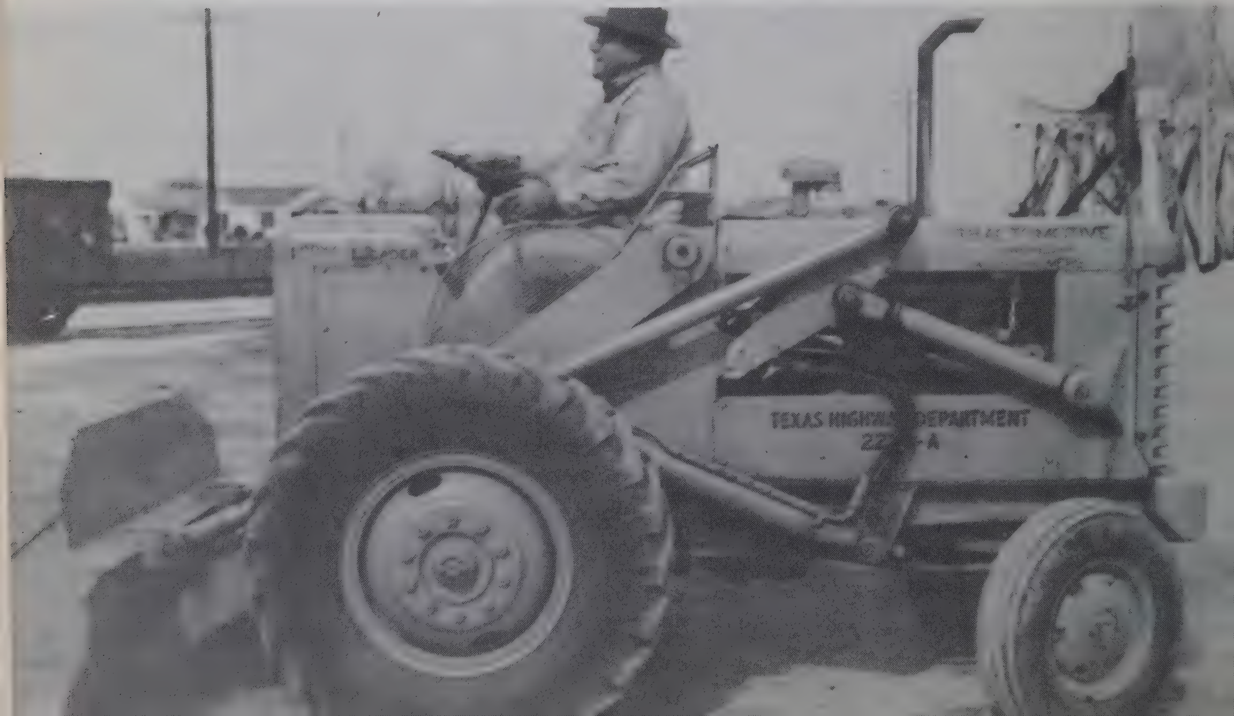
Submitted by H. Schneeman Jr.
District Maintenance Engineer
District 16

On November 17, 1952, M. M. Truelove, Skilled Laborer, was overcome by gas fumes when operating an end loader. He was loading dirt on trucks with the end loader and the wind was blowing toward his back, thus blowing the gas fumes from the motor toward him.

The loader used was a Tracto Loader, Model Number T. L. -10, manufactured by the Tractomotive Corporation, Deerfield, Illinois.

This was not caused by any deterioration in the exhaust pipe on the machine. It appears that the original construction of the exhaust pipe is faulty in that it is too short to insure the fumes being blown over the operator's head. It extended only about six inches above the top of the machine. To remedy this fault, we have made new exhaust pipes in the shop. These pipes are approximately three feet long. At this height, the gas fumes should be blown over the operator's head.

The long exhaust pipes have been installed on all of our loaders of this type and one is on the machine shown in the photograph.



THE STATE OF TEXAS

Personnel Changes

H. L. Arno, Director of Personnel

It's difficult to keep up with personnel changes which occur over the state. C & M hopes, through this monthly section, to acquaint all personnel with changes in which they might be interested. Because space would not permit printing all changes, only those in Group 5 or higher will be listed. The changes below have occurred since January 1, 1953.

1. Administration: Fred A. Wemple, Member of the State Highway Commission from Midland, Texas, expiration of term of office February 15, 1953.
2. Administration: Marshall Formby, Hereford, Texas, appointed as Member of the State Highway Commission February 16, 1953.
3. Bridge Division, Austin: Wayne Henneberger appointed as Senior Designing Engineer February 5, 1953, returning from Military service.
4. Bridge Division, Austin, to District 14, Urban Residency, Austin: H. W. Kessler, Senior Office Engineer, transferred February 28, 1953, as Senior Designing Engineer.
5. Bridge Division, Austin: Herbert K. Rigsbee changed from Designing Engineer to Senior Designing Engineer March 1, 1953.
6. Insurance Division, Austin, to Motor Vehicle Division, Austin: D. T. Harkrider, Director of the Insurance Division, transferred March 1, 1953, as Director of the Motor Vehicle Division.
7. Insurance Division, Austin: Robert E. Lindsey, Assistant Director of the Insurance Division, appointed as Director of the Insurance Division March 1, 1953.
8. Insurance Division, Nacogdoches, to Insurance Division, Austin: Richard Schieffer, Senior Safety Instructor, transferred April 1, 1953, as Assistant Director of the Insurance Division.
9. Materials and Tests Division, Austin: Arthur J. Hill changed from Asphalt Engineer to Senior Asphalt Engineer February 1, 1953.
10. Materials and Tests Division, Austin: William Shafer changed from Concrete Engineer to Senior Concrete Engineer February 1, 1953.
11. Motor Vehicle Division, Austin: E. J. Amey, Director of the Motor Vehicle Division, resigned February 28, 1953.
12. Motor Vehicle Division, Austin: Gordon Carlson, Assistant Director of the Motor Vehicle Division, resigned February 28, 1953.

13. District 1, County Residency, Sulphur Springs: H. M. Dyer changed from Senior Resident Engineer to Senior Designing Engineer February 1, 1953.

14. District 1, County Residency, Greenville: F. L. Stephenson appointed as Senior Resident Engineer March 16, 1953.

15. District 1, County Residency, Greenville, to District 15, District Headquarters, San Antonio: B. L. DeBerry, Senior Resident Engineer, transferred as Assistant District Engineer March 31, 1953.

16. District 2, County Residency, Weatherford: John S. Guthrie changed from Resident Engineer to Senior Resident Engineer January 1, 1953.

17. District 3, District Headquarters, Wichita Falls: J. B. Nabers, District Engineer, accepted retirement December 31, 1952.

18. District 3, County Residency, Graham, to District Headquarters, Wichita Falls: L. B. Dean, Senior Resident Engineer, appointed as District Engineer effective January 1, 1953.

19. District 4, District Headquarters, Amarillo: J. W. Gowens changed from Designing Engineer to Senior Designing Engineer January 1, 1953.

20. District 6, County Residency, Andrews: Benjamin C. Sides changed from Resident Engineer to Senior Resident Engineer January 1, 1953.

21. District 6, County Residency, Fort Stockton: James W. Whitson changed from Resident Engineer to Senior Resident Engineer January 1, 1953.

22. District 8, County Residency, Colorado City: Clarence R. Rea changed from Resident Engineer to Senior Resident Engineer April 16, 1953.

23. District 8, County Residency, Snyder: Homer Ray changed from Resident Engineer to Senior Resident Engineer April 16, 1953.

24. District 11, District Headquarters, Lufkin: W. B. Keen, District Maintenance Engineer, accepted retirement December 31, 1952.

25. District 12, County Residency, Conroe: B. W. Cooper changed from Resident Engineer to Senior Resident Engineer April 1, 1953.

26. District 12, County Residency, Dickinson: G. W. Callihan changed from Resident Engineer to Senior Resident Engineer April 1, 1953.

27. District 12, County Residency, Hempstead: J. S. Griffith changed from Resident Engineer to Senior Resident Engineer April 1, 1953.

28. District 13, County Residency, Edna: E. J. Effenberger changed from Resident Engineer to Senior Resident Engineer January 1, 1953.

29. District 14, District Headquarters, Austin: H. C. Carter, District Construction Engineer, resigned January 31, 1953.

30. District 14, County Residency, Bastrop: Lawrence E. Schulz changed from Resident Engineer to Senior Resident Engineer April 16, 1953.

31. District 15, District Headquarters, San Antonio, to District 24, County Residency, Alpine: Chas. T. Holmes, Assistant District Engineer, transferred January 16, 1953, as Senior Resident Engineer.

32. District 15, District Headquarters, San Antonio: W. R. Faust changed from Senior Designing Engineer to District Construction Engineer February 1, 1953.

33. District 15, County Residency, San Antonio, to District Headquarters, San Antonio: H. F. Hilgers changed from Senior Resident Engineer to Senior Designing Engineer February 1, 1953.

34. District 15, County Residency, San Antonio: John D. Stockton changed from Resident Engineer to Senior Resident Engineer February 1, 1953.

35. District 15, District Headquarters, San Antonio: Herman Seele changed from Office Engineer to Senior Designing Engineer April 1, 1953.

36. District 16, District Headquarters, Corpus Christi: Thomas C. Davis, District Engineer, resigned March 10, 1953.

37. District 16, District Headquarters, Corpus Christi: T. O. Foster Jr., Assistant District Engineer appointed as District Engineer March 10, 1953.

38. District 16, County Residency, Corpus Christi, to District Headquarters, Corpus Christi: E. M. Ruth, Senior Resident Engineer, appointed as Assistant District Engineer March 10, 1953.

39. District 17, District Headquarters, Bryan: A. A. Vance changed from Resident Engineer to Senior Resident Engineer January 1, 1953.

40. District 17, County Residency, Hearne: Joe G. Hanover changed from Resident Engineer to Senior Resident Engineer February 1, 1953.

41. District 21, County Residency, Laredo: J. S. Leyendecker changed from Resident Engineer to Senior Resident Engineer March 1, 1953.

42. District 23, County Residency, Lampasas, to District 14, County Residency, Austin: Don L. Hook, Senior Resident Engineer, transferred January 1, 1953.

43. Dallas Urban Project: O. G. Rayner appointed as Supervising Urban Engineer April 1, 1953, returning from military service.

44. Houston Urban Project: Louis C. McCrary changed from Designing Engineer to Senior Designing Engineer April 1, 1953.

* * * * *

"Instead of putting all these tall signs up, Mr. Washburn, wouldn't it be cheaper to leave the short ones in and lower the pavement?"

Painting Guard Posts

Bayles Roe, Senior Maintenance Foreman
District 22

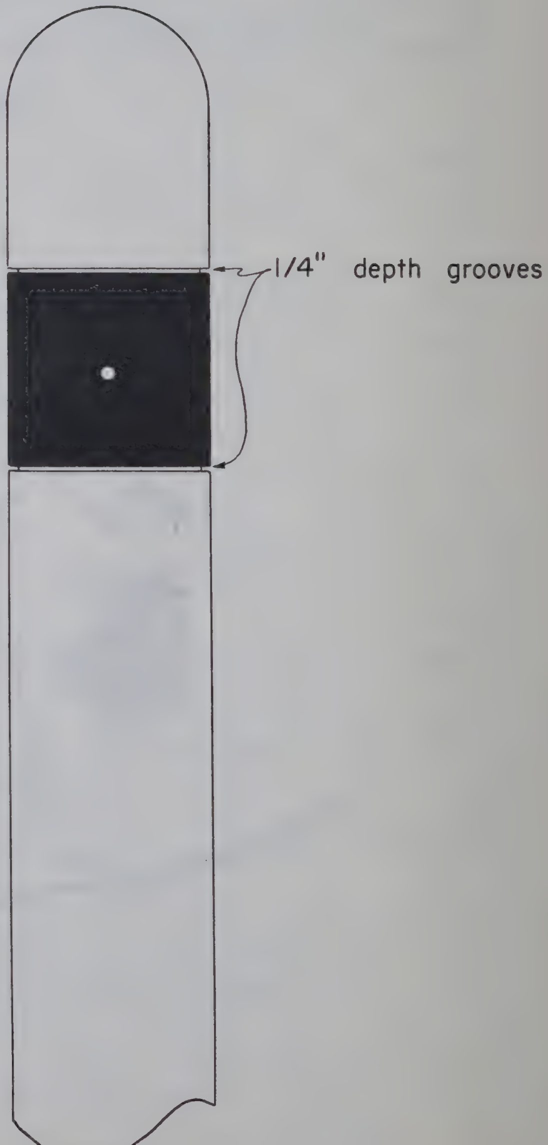
Several of the Maintenance Foremen in District 22 have adopted a method suggested a number of years ago by Frank Adams, of the Rocksprings Section, for the painting of guard posts.

The method formerly employed was to paint the entire post aluminum and allow it to dry. Then, by blanking out the six-inch space with paper tacked to the post, or by use of string to outline space, the black stripe was painted.

This sometimes became quite costly as normally, in order to allow the aluminum paint time to dry, another trip was required to the site for the workmen to apply the black stripe. In a good many instances, poor lines were obtained due to slippage of the string or running together of the paints.

Now, grooves approximately one-fourth inch deep are sawed around the post to outline the six-inch black stripe area, before the posts are erected. This affords a guide line and prevents the paints from running together. The painting of a post can thus be completed in one operation and the post can be repainted several times before it becomes necessary to clean the grooves.

Although some time is consumed initially in grooving the posts, it is the opinion of those who use this method that good results are produced more economically.



BRIDGE REPAIRS

To Concrete Girders And Expansion Joints

R. W. Crook, Resident Engineer
District 2

A girder and joint repair job completed in District 2 on a concrete girder bridge over the west fork of the Trinity River on U.S. 377 in Fort Worth, is unique in the type of damage and also in the methods of repair used.

This bridge consists of one 164-foot-4-inch concrete cantilever unit (39 feet, 8 inches; 85 feet; 39 feet, 8 inches) over the river channel with six 42 1/2-foot concrete girder spans on one side of the channel, and seven 42 1/2-foot concrete girder spans on the other side.

The type of damage can be noted in Pictures 1, 2, and 3, which are of the bents supporting the fixed end of the girder spans, and at the ends of the cantilever spans. The damage consisted of crushing and splitting the riser block, which was 1 foot, 6 inches by 1 foot, 1 inch reinforced concrete, and spalling of the cap itself, as noted in the photographs. As this failure progressed it caused the armored expansion joints on top to change elevation and begin to fail. Probably the failure of the caps aggravated the failure of the joints and the failure of joints caused a pounding of the caps and girders, causing more damage to them.

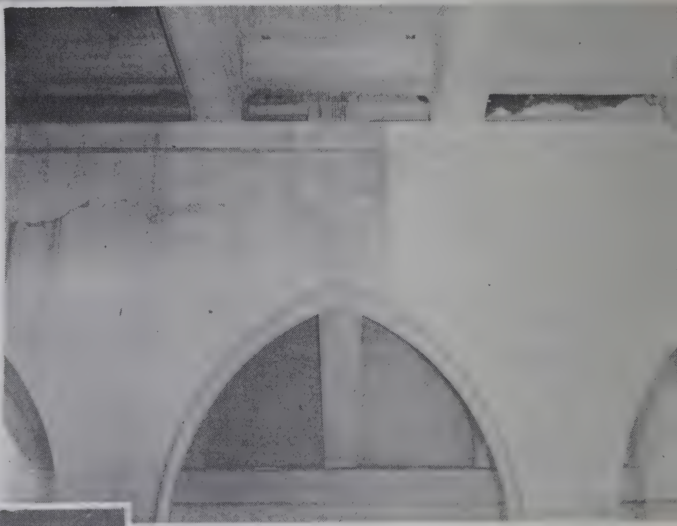
The cause of these failures was probably three fold. First, the expansion end of the girders froze and put a great deal of tension on the fixed end. Second, the space between the ends of girders of the cantilever span and the riser block became clogged with silt, small gravel, and old expansion joint material, which tended to push on the riser block as the cantilever unit expanded and moved up and down under changing loads. Third, the impact from the joints increased the forces working against the damaged parts.

The bridge has a 40-foot roadway, and a daily traffic count of about 25,000, therefore the repairs were done without closing the bridge to traffic.

The repair work consisted of jacking up the end of the girder span at the damaged cap to the original elevation, cutting off the riser blocks, cutting out and replacing about 25 feet of damaged concrete on each cap, replacing the riser blocks with prefabricated steel seats, and freeing the expansion end of this span. After all work was completed underneath the bridge, the expansion joints on top were cut out and replaced with a joint built up in the field. The photographs show the methods of repair used.

The work was done by J. M. Purris, Contractor, at a contract price of $15, 095.

Note damage to bent cap under interior girder number 2.

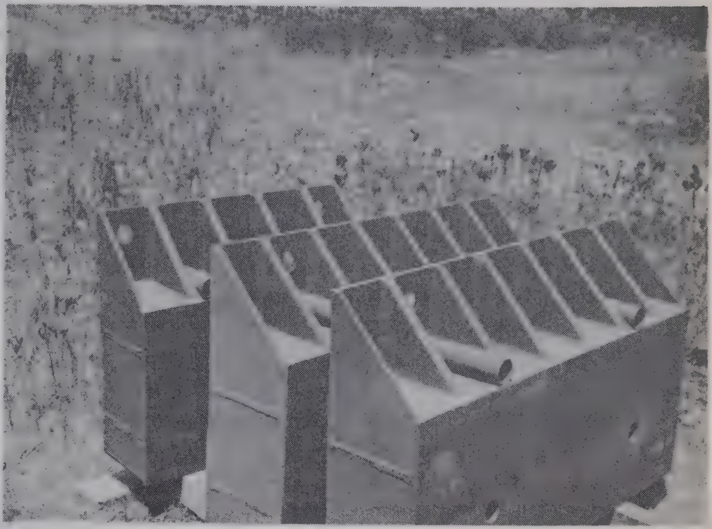


Damage to bent cap under interior girders number 3 and 4.

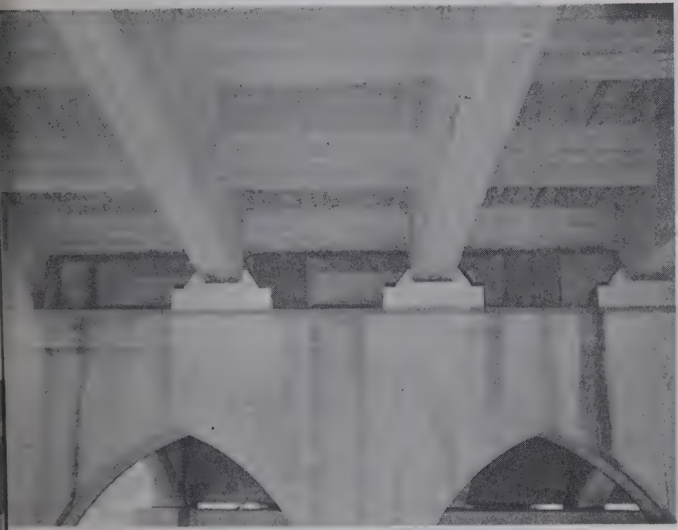
View under interior girder number 4.

Steel column shoring under ends of girders of 42 1/2-foot span adjacent to bent number 7.

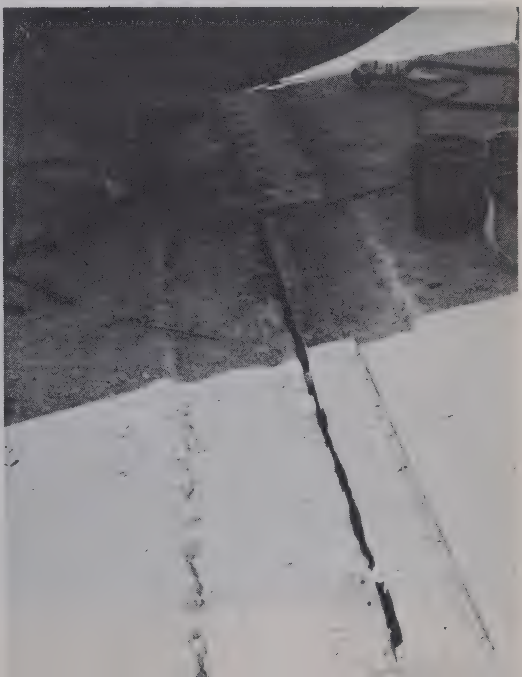
Removal of portion of cap on bent number 7.



Stiffener plates and grout pipes in steel support base.

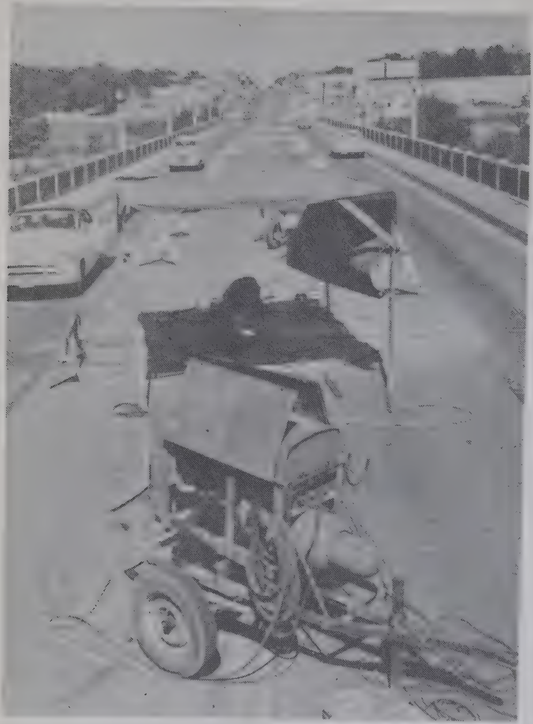


Steel supports under interior girders number 2, 3, and 4.

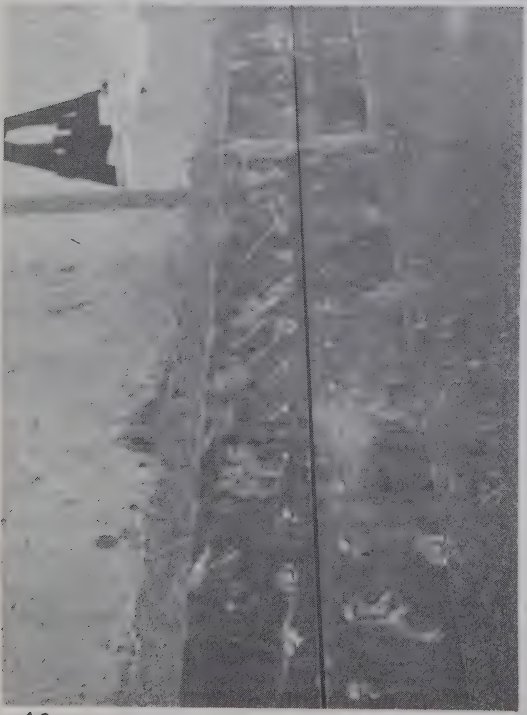


Portion of joint with old plate and angles removed. Forty-two-foot-six-inch concrete girder span on left, cantilever span on right.

One method of handling traffic, looking east.



Portion of completed repaired joint.



Portion of joint being repaired.

Completed repaired joint.

"Comments From the Traveling Public"
OVER THE HIGHWAYS

. . . "Y'awl" can tell a stranger more to know so little about your state -- enjoyed every minute of our travels in Texas though and envy your pride and progress . . .

Marion, North Dakota

. . . The abundance of fanfaron . . .

Tucson, Arizona

. . . Believe it or not, I was most impressed with the vast amount of nothing in the western part of your state . . .

Bartholomew Van Rothe
Boston, Massachusetts

. . . Would like to get even with the sharpie in El Paso who sold me two canvas water containers; one for drinking and the other for the car. He said that they were a necessity for crossing the West Texas desert -- should have known better but fell anyway . . .

Frances F. Smythe
Melvin Mills, New Hampshire

. . . The extremities of the climate, terrain, and highways in your state were most unusual. Even the people were different in one township than in the other . . .

New London, Connecticut

. . . To my surprise, you have got trees and forests, streams and lakes with water -- no fancy cowboys or Longhorns -- pictures and stories on your state have disillusioned us . . .

Detroit, Michigan

. . . The flagmen on road jobs stand too close to workmen and don't warn you enough in advance. We lived in constant fear of rounding a curve or topping a hill and running into your workers . . .

Pittsburgh, Pennsylvania

. . . Always thought Texans lied about the size and fierceness of their mosquitos like the blokes do about the size of everything else in their state -- my apologies -- their descriptions don't do the bloody South Texas mosquitos half justice . . .

Newcastle, England

. . . Please, I suggest striping black top in order to see on rainy nights . . .

W. A. Jackson
Fort Smith, Arkansas

. . . Some roadside parks unkept - grass grown up and trash all over the place. Some didn't even have trash cans. What else could you expect . . .

Greenbay, Wisconsin

. . . Sides of highways are very dirty with trash and beer cans. Your Texas maps do not give locations of interesting points to see . . .

Yakinia, Washington

. . . We didn't like the narrow highways and bridges, unnecessary sharp corners, or slow moving farm equipment on highways . . .

San Diego, California

. . . Your roads and parks stops were the finest we have ever traveled . . .

Akron, Ohio

. . . There were not any markers telling one the names of mountains and points of interest. Anyone would really appreciate this . . .

Los Angeles, California

. . . Lack of firewood at roadside park ovens . . .

Linton, Indiana

NEW DIRECTOR OF ARKANSAS HIGHWAYS

Herbert Eldridge, formerly Chief Engineer of Planning, D-15, has assumed the duties of Director of the Arkansas Highway Department. C&M would like to congratulate Mr. Eldridge on his new position, and with him goes our very best wishes.

C&M is happy to report that in the first four months of 1953 there have been no fatalities to highway employees from on-the-job accidents.